Proudman Oceanographic Laboratory

Acoustic Doppler Current Profiler Records

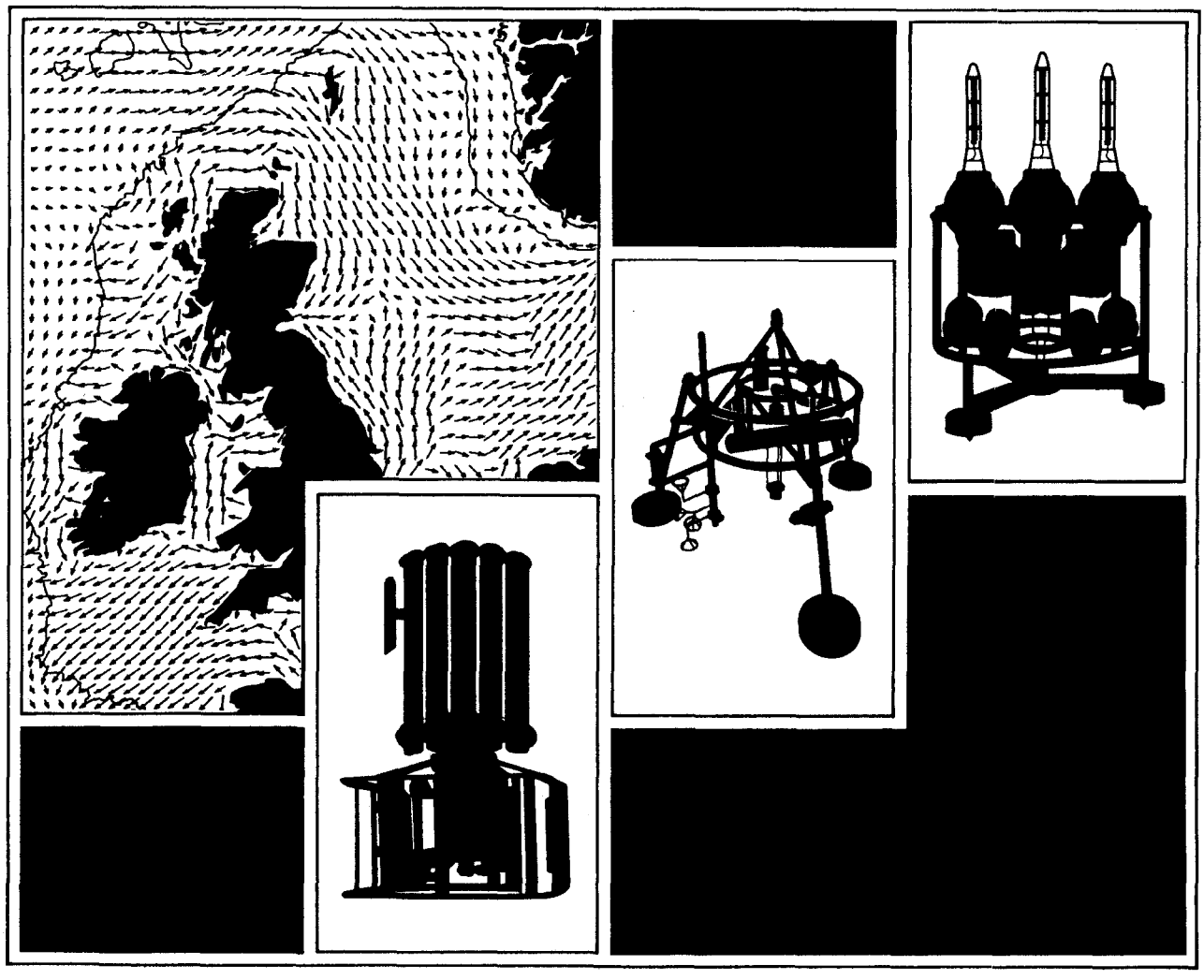
Site C – 54°20' N 00°24' E

August 1988 – September 1989

North Sea Project

PJ Knight MJ Howarth and D Flatt

Report No 16 1991



Natural Environment Research Council

PROUDMAN OCEANOGRAPHIC LABORATORY

Bidston Observatory,
Birkenhead, Merseyside, L43 7RA, U.K.

Telephone: 051 653 8633
Telex 628591 OCEANB G
Telefax 051 653 6269

Director: Dr. B.S. McCartney

Natural Environment Research Council

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KNIGHT, P.J., HOWARTH, M.J., & FLATT, D.

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ABSTRACT

This report describes results from an ADCP current meter rig positioned at site C during the North Sea Project. Site C was one of six current meter sites used throughout the survey part of the experiment. Standard plots are shown as well as statistical output from the calibrated current meter records.

ISSUING ORGANISATION

Proudman Oceanographic Laboratory
Bidston Observatory
Birkenhead, Merseyside L43 7RA
UK

Director: Dr B S McCartney

TELEPHONE
051 653 8633

TELEX
628591 OCEAN B

TELEFAX
051 653 6269

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1 INTRODUCTION

Fifteen months of data were gathered in the southern North Sea as part of the North Sea Project, a NERC Community Research Project. Each month the RRS Challenger ship time was split between a two week survey and a two week process cruise.

This report describes the results from a current meter mooring at 54° 20'N 00° 24'E deployed during the survey cruises. The mooring was first deployed on survey cruise Challenger C33/88 and subsequently re-deployed during follow up cruises between August 1988 and September 1989.

Figure 1 shows the position of the mooring, site C, and its relative position to other sites in the North Sea. It was one of six current meter moorings deployed during the North Sea Survey, and was situated in a region of moderate tidal currents, up to a maximum of 1.1 m s^{-1}, and in 60m depth of water. During the summer the site was in a frontal region between stratified water in the North and vertically well mixed water to the South. Data reports for the other sites are given in POL reports 11, 12 ,13 (Knight, Falconer and Howarth, 1990) and 15, 17 (Knight, Howarth and Flatt, 1991).

The mooring, Figure 2, contained two instruments, an Acoustic Doppler Current Profiler (ADCP) and an Aanderaa, RCM 4 or RCM 7 current meter, both mounted on the sea bed. The ADCP recorded vector averaged North and East components of current at set levels throughout the water column. The Aanderaa measured conductivity, pressure and temperature. The pressure sensor, not of tide gauge quality, gave an indication of mooring stability.

Gaps of the order of 20 minutes occurred in the ADCP data during C37/88 and C53/89 deployments. After calibration of the data and, if required, linear interpolation of the gaps, statistics were calculated and a low pass filter was applied to produce six hourly values which were also statistically analysed. Finally standard current meter plots were produced in order to check data quality and to aid in interpretation of the data.

The reference direction was estimated for each deployment, see Section 7, since the compasses returned arbitrary zero directions, because of a design fault. During C43/89, C45/89 and C47/89 cruises RCM's were not fitted due to their unavailability. The ADCP's returned 74% (angle corrected) and the RCM's 100% good data when deployed. The data coverage over the 15 month period was 74% for the ADCP's and 76% for the RCM's.

2 SUMMARY OF DEPLOYMENTS

The following information gives an overview of the data processed at site C during the North Sea project.

Mooring	Meter No	Deployment	Recovery	Meter Ht(m)	Data length	Comments
C33CC	0001	13-AUG-88	12-SEP-88	0.8	0.0 days	Corrupted data set
C33CC	4387	13-AUG-88	12-SEP-88	0.8	29.5 days	Good data set
C36CC	0001	18-SEP-88	09-OCT-88	0.8	0.0 days	Corrupted data set
C36CC	7570	18-SEP-88	09-OCT-88	0.8	20.8 days	Good data set
C37CC	0005	09-OCT-88	09-NOV-88	0.8	30.4 days	Frame movement + Gaps
C37CC	1509	09-OCT-88	09-NOV-88	0.8	30.7 days	Good data set
C39CC	0003	10-NOV-88	07-DEC-88	0.8	27.1 days	Frame movement
C39CC	7570	10-NOV-88	07-DEC-88	0.8	27.1 days	Good data set
C41CC	0004	07-DEC-88	01-JAN-89	0.8	0.0 days	Corrupted data set
C41CC	7570	07-DEC-88	01-JAN-89	0.8	24.9 days	Good data set
C43CC	0002	01-JAN-89	07-FEB-89	0.8	37.1 days	Good data set
C45CC	0003	07-FEB-89	07-MAR-89	0.8	27.7 days	Good data set
C47CC	0003	09-MAR-89	08-APR-89	0.8	29.7 days	Frame movement
C49CC	0004	08-APR-89	06-MAY-89	0.8	28.2 days	Good data set
C49CC	9632	08-APR-89	06-MAY-89	0.8	28.2 days	Good data set
C51CC	0003	06-MAY-89	04-JUN-89	0.8	22.6 days	Short by 5.9 days
C51CC	9632	06-MAY-89	04-JUN-89	0.8	28.5 days	Good data set
C53CC	0001	04-JUN-89	03-JUL-89	0.8	4.0 days	Short by 24.8 days + Gaps
C53CC	6443	04-JUN-89	03-JUL-89	0.8	28.8 days	Good data set
C55CC	0002	03-JUL-89	04-AUG-89	0.8	29.0 days	Trawled after 29.0 days
C55CC	9633	03-JUL-89	04-AUG-89	0.8	29.0 days	Both good data sets
C57CC	0004	05-AUG-89	01-SEP-89	0.8	26.9 days	Good data set
C57CC	9631	05-AUG-89	01-SEP-89	0.8	26.9 days	Good data set
C59CC	0002	01-SEP-89	30-SEP-89	0.8	29.4 days	Good data set
C59CC	9633	01-SEP-89	30-SEP-89	0.8	29.4 days	Good data set

3 RIG SYSTEM DESCRIPTION

The mooring was deployed in a water depth of 60m at latitude 54° 20'N and longitude 00° 24'E. It consisted of two instruments, see Figure 4, and an IOS acoustic release mounted on a frame positioned on the sea bed. On recovery the release was triggered by sending acoustic signals from the ship so that the frame separated from the ballast weight. The frame under its own buoyancy (glass spheres) then rose to the surface ready for picking up. Figure 2 shows a schematic diagram of the mooring.

4 CURRENT METER SPECIFICATIONS

The ADCP (Proudman Oceanographic Laboratory 250 KHz version) measured the vertical profile of currents in bins from the sea floor to the surface. The Aanderaa of type RCM 4 or RCM 7 was used to measured conductivity, temperature and pressure.

4.1 Acoustic Doppler Current Profiler (POL 250 KHz version)

The ADCP sends out short acoustic pulses, typically lasting a few thousandths of a second, at a fixed frequency. The acoustic pulses are transmitted in two narrow beams at right angles to each other and 30° to the vertical and are reflected back to the ADCP by small particles such as plankton which move with the water. The frequency of the reflected signal is changed by a small amount proportional to the current speed, the Doppler shift. By measuring the frequency change along the two beams the speed and direction of the currents are determined. The currents at different heights through the water column are obtained by chopping the return signal into segments by time.

The 250 KHz ADCP has a range of 100m and can measure up to 24 bins. However, the technique has some limitations which reduce the amount of good data return. The closest bins to the transducers can give erroneous data due to the time taken for transients to decay and the far end bins can be effected by interference from side lobes reflected from the sea surface. Hence, the good data return bins are usually between 25% of depth from the surface and 10% of depth from the bottom. The good bin returns are as follows: C37CC / C39CC / C43CC / C45CC / C51CC / C53CC / C55CC / C57CC / C59CC / bins(1-7) and C47CC / C49CC / bins(1-8) with bins 1 (bottom) to 8 (top). The M2 amplitude generally increases with each bin up through the profile. However, amplitudes for bin 5's tended to be significantly lower than for bin 4's. Also, deployments C39CC and C49CC show larger than expected vector mean speeds. Both of these anomalies are currently being investigated.

4.2 ADCP specification

Speed	Range	0 to 350 cm s^{-1}
	Accuracy	±4 cm s^{-1}
Direction	Refer to section **7 ANGLE CORRECTION TO ADCP DATA**	
Tilt	Two tilts measured at 90° to each other (not used in processing)	

4.3 ADCP set up details

Set up	Sample period	10 minutes
	Number of bins (cells)	8
	Number of pings in ensemble	300
	First bin height/Bin separation	11.1 m / 5.7 m
	Bin heights (range) (1-8)	11.1 m / 16.8 m / 22.5 m / 28.2 m / 33.9 m / 39.6 m / 45.3 m / 51.0 m

4.4 Aanderaa RCM 4 and RCM 7 current meters

Temperature is measured by a thermistor fitted into a stud extending into the water. Conductivity is measured by an electrodeless induction conductivity cell and pressure is measured by a sensor consisting of a potentiometer driven by a Bourdon tube. Both types of meter used similar sensors, but differed in data storage. The RCM 4 used 6mm width reel magnetic tape and the RCM 7 used solid state memory.

4.5 Aanderaa sensor specifications

Temperature	Range	-2.46 to 21.4°C
	Accuracy	±0.05°C
Conductivity	Range	21 to 51 mmho cm^{-1}
	Accuracy	±0.025 mmho cm^{-1}
Pressure	Range	0 to 100 PSI or 0 to 200 PSI
	Accuracy	±1%

5 DATA PROCESSING STEPS

5.1 Raw data transfer

The data from the deployments were brought back to POL in three different forms. These consisted of standard magnetic cassette from the ADCP, 6mm width magnetic tape from the RCM 4 and 3.5 inch floppy disk from the RCM 7. The RCM 7 data was translated from the solid state memory on board ship and the RCM 4 and ADCP data were translated on to an IBM/PS2 at POL. The data were then transferred to the IBM 4381 mainframe via a 3270 terminal emulator on the IBM/PS2.

5.2 Processing stage

Two software systems, CALT and CALP, were developed at POL for quick and efficient processing and display of times series data, such as current meter data. The CALT system calibrates and checks for errors and the CALP system produces standard graphical output, filtered and non-filtered statistical analyses. Before calibrating the data, all the information required for processing were input into an ORACLE data base. All the information could then be accessed easily with FORTRAN programs.

Processing was then initiated by CALTUX, which calls a suite of FORTRAN programs for error checking and producing calibrated data. Any errors found from the initial run were edited out of the raw data and CALTUX run again. After successful completion of the CALTUX stage another suite of FORTRAN programs initiated by DOPTX were used to produce the output contained in this report. The types of plot obtained, details of filtering and statistics are explained in more detail in the following sections.

5.3 Interpolation

In some data sets, gaps occur of the order of 20 minutes, as indicated by the meter information sheets found further into the report and in section 2 SUMMARY OF DEPLOYMENTS. In these cases the gaps were filled by linear interpolation to the data before producing standard graphical output and statistical analyses.

6 DETAILS OF STATISTICS AND FILTERING

6.1 Simple statistics

A simple statistical analysis was carried out on each calibrated data set. The following statistics were calculated :-

(1) Mean, variance and standard deviation of the East and North components of velocity.
(2) The mean vector speed and direction were calculated from the above statistics.
(3) The maximum ten and minimum ten Northings and Eastings and the top speeds.

6.2 Variance ellipse statistics

Statistical analysis was also carried out on the ellipse which can be graphically represented by a scatter plot. The following statistics were calculated :-

(1) The maximum and minimum variances and their ratio (minimum/maximum). If the ratio is near to one the currents have no preferred direction, whilst if it is near to zero the flow is rectilinear.
(2) The direction associated with the maximum and minimum variance, in the range of -180° to $+180^{\circ}$.
(3) The total variance which equals the sum of the North and East component variances or the sum of the maximum and minimum variances.
(4) The average direction for each half of the ellipse, related to the directions of maximum variance. If these directions differ by 180° the scatter plot is symmetrical.

6.3 Filtering

The ten minute calibrated data were also low pass filtered, see Figure 3 which shows the filters response function, and sub-sampled every 6 hours. Three days of data are lost at the beginning and the end of the record. The statistical analysis was repeated on the filtered data set.

7 ANGLE CORRECTION TO ADCP DATA

7.1 Direction measurement

Figure 5 shows how beam 1 and beam 2 of the ADCP align with respect to the frame and the compass. The compass manufactured by Digicourse (no longer in production) measures the angle between magnetic North and the frame. The two beams can be converted into East and North components of velocity by using the angle obtained from the compass and trigonometry.

Preliminary analysis of ADCP data obtained from the Celtic Sea showed no problem with this type of compass. However, during the North Sea Project it had a tendency to stick giving directions of flow different from those predicted by tidal model results (Proctor, personal communication) and previous current meter records (Howarth, 1990). Also, the frame moved on the sea floor during some storm events. A correction was then required to the frame angle for each deployment.

7.2 Correction procedure

The ADCP data were first processed using the CALT and CALP software. The statistical analysis gave the angle α of maximum variance as shown in Figure 6(a). This angle α was taken to represent the M2 major axis tidal ellipse angle β shown in Figure 6(b). The compass, although giving incorrect readings of frame angle was recording direction to an unknown fixed position. It was therefore decided to correct the frame angle by adding a correction angle.

The correction angle was calculated from the difference between β calculated from a model and α calculated from the initial raw data analysis. The model gave a depth average value so α obtained from the data bin closest to this depth was needed. The bin to use was found by taking the bin nearest to a value $z=0.4D$, where D is the total depth of water and z is the height from the bottom (Prandle, 1982). There is a 180^{o} ambiguity in the calculation of α which was resolved by study of the M2 tidal phase given by the model and by the observations.

7.3 Adaption of correction for frame movements

During some of the deployments the tilt and compass measurements from the ADCP and recovery positions of the mooring indicated limited movement of the frame on the sea floor. On some occasions the compass reacts correctly to the movement and the correction procedure is as in section 7.2. However, when the compass does not react correctly to these changes the record has to be split up into stable periods and the procedure in section 7.2 followed.

8 FORMAT OF DATA OUTPUT

All speeds and velocities are in m/s, directions in degrees true and time in GMT. The results are ordered by mooring number (See page 10). Each mooring result is made up of mooring information, meter information and, combined and depth averaged graphical output and statistics (unfiltered and filtered) with the ADCP first followed by the RCM.

8.1 Mooring information

Position latitude	: Latitude of deployment
Position longitude	: Longitude of deployment
Water depth(m)	: Depth measured from ship's echo sounder
Deployed on cruise	: Cruise identifier
Recovered on cruise	: Cruise identifier
Site name identification	: Additional site identifier
Magnetic deviation	: Taken from charts
Rig deployed on	: Time frame on the bottom
Rig recovered on	: Time release fired on rig
Period of deployment	: Total time of deployment
Comments	: Details regarding mooring

8.2 Meter information

Rig number	: Unique POL mooring/rig reference
Meter number	: Four digit current meter number
Frame angle correction	: Correction to be added to ADCP frame angle
Sample interval	: Sampling interval in seconds
Meter height from bottom	: Height in metres
Position of meter on rig	: A for attached to frame
Meter type	: DP for ADCP AA for RCM 4 AS for RCM 7
Meter started	: Date and time
Meter stopped	: Date and time
Time of last valid scan	: Used when good data ends before switch off
Period in days on record	: Total time meter switched on
Total number of scans	: Used to check timing
Timing error	: Error in seconds
Comments	: Details regarding meter

8.3 Combined ADCP profile output

(1) North and East components of velocity against time. The semi-diurnal nature of the tides can be seen as well as the Spring/Neap cycle in both components of velocity.

(2) Scatter diagrams of North components of velocity against the East components. Shows the direction and magnitudes of the currents. This plot is often a good check on the quality of the data, in particular regarding direction and possible problems at low speeds.

(3) Stacked filtered stick plot. The filtered data can be displayed in a stick type way in order to see the change of the residual flow with time and through the vertical.

(4) Combined statistics for each bin giving vector mean speed and direction, and maximum and minimum variance and directions of maximum and minimum variance.

8.4 Single bin (closest to depth average) output

(1) North and East components of velocity against time.

(2) Eulerian progressive vector plot. The nature of the residual flow is emphasised, although the semi-diurnal tides are also apparent.

(3) This is followed by simple statistics of the calibrated data and filtered data. The filtered statistics page is indicated by the letter 'F' at the end of the file type printed at the top of the page. The statistics shown are from the ADCP bin closest to a value representing the depth averaged value.

8.5 Aanderaa graphical output

(1) Temperature, salinity and pressure against time. Salinity is calculated from temperature, conductivity and pressure.

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The authors would like to thank POL engineers for setting up, deploying and recovering the instruments. The survey on such a large scale and with quick turn around of equipment needed would not have yielded such excellent returns without their effort and it is to their credit. We would also like to thank Steve Loch of BODC for undertaking the initial design and implementation of the CALTUX software.

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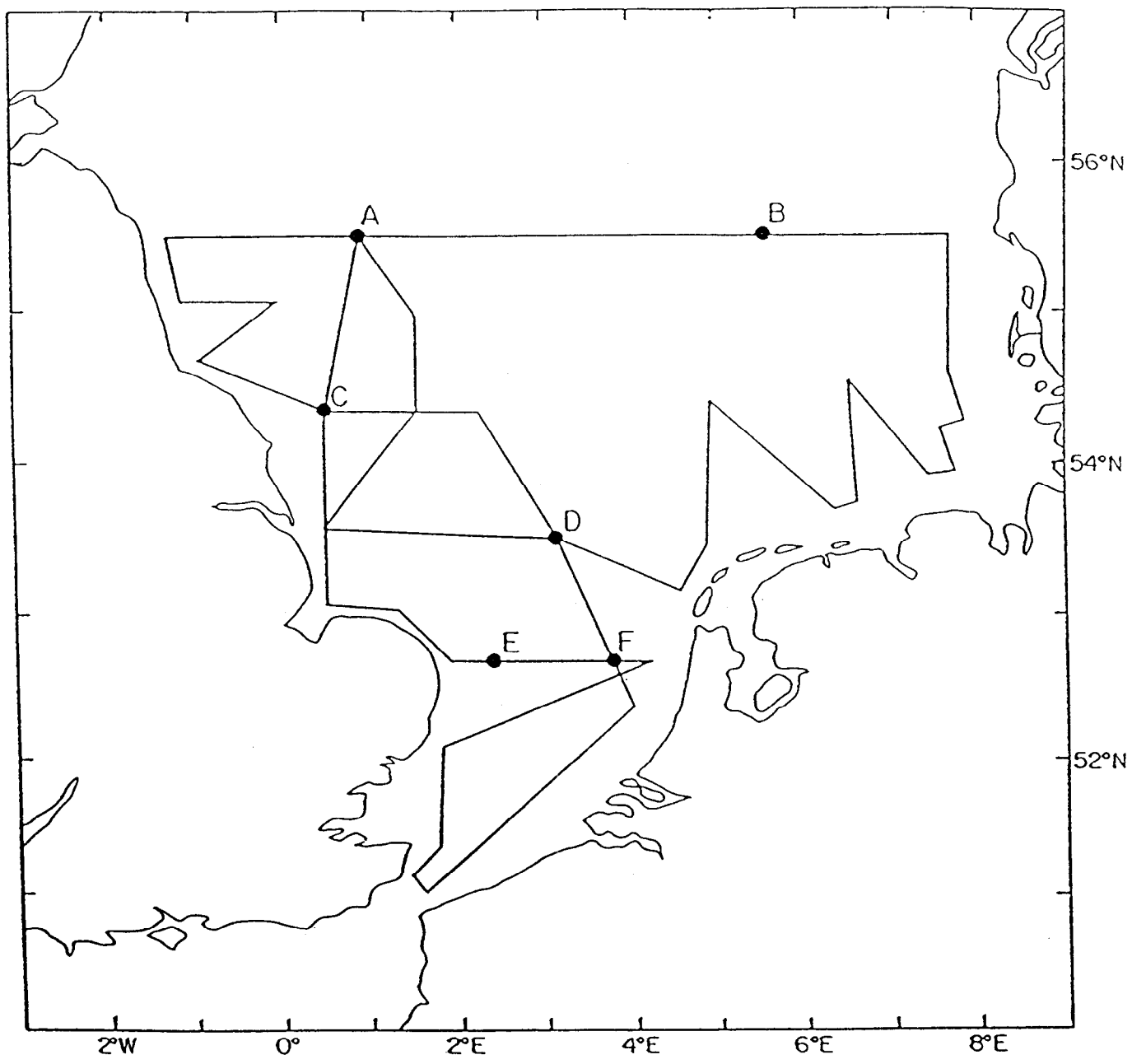


Figure 1. Positions of North Sea Project current meter rigs.

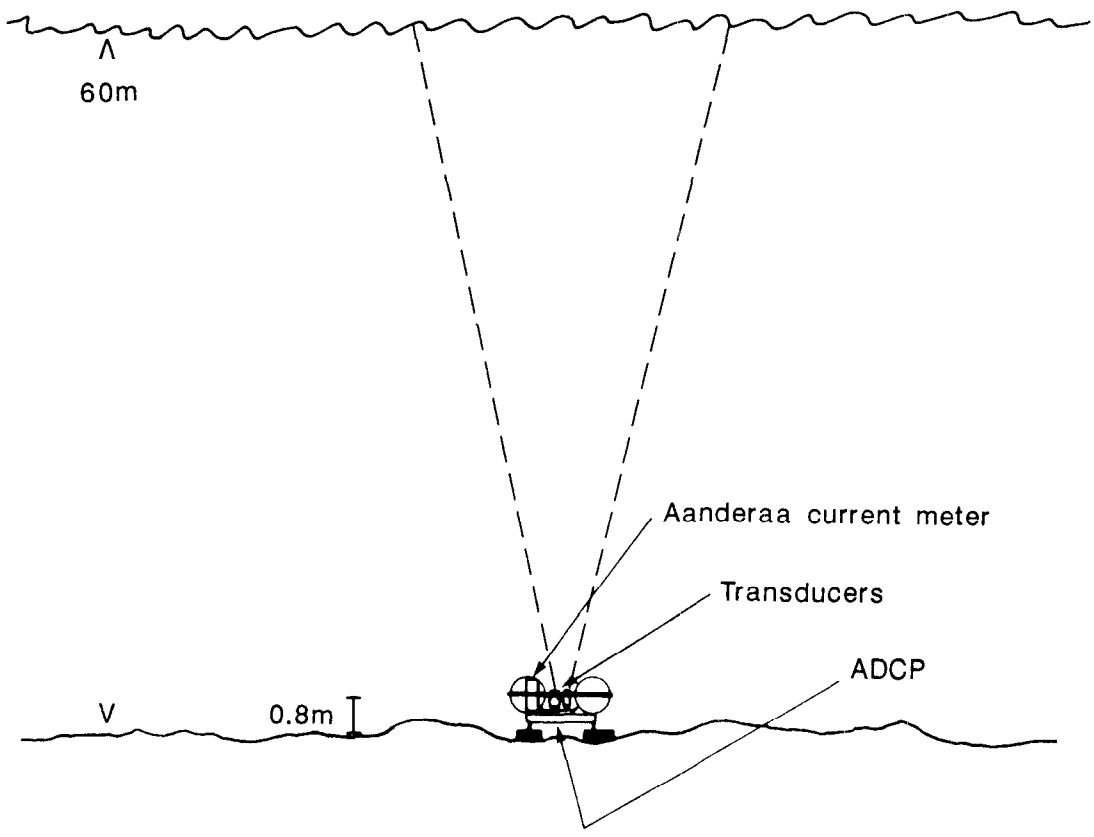


Figure 2. Mooring system schematic description.

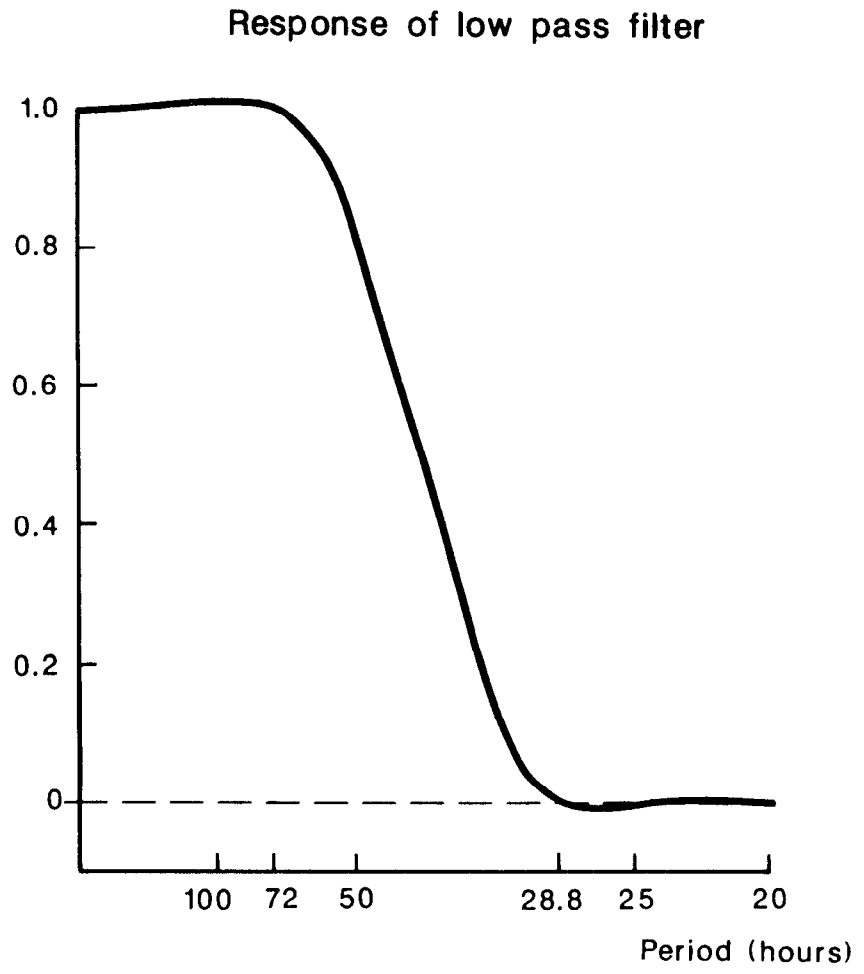


Figure 3. Response of low pass filter.

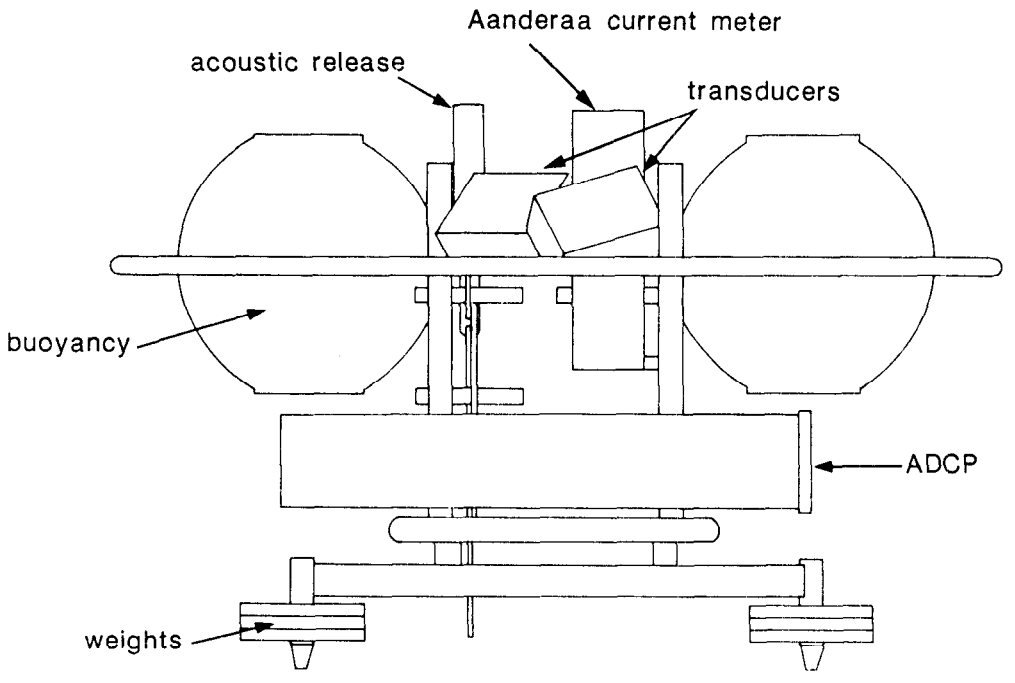


Figure 4. Diagram of ADCP and Aanderaa current meters on frame.

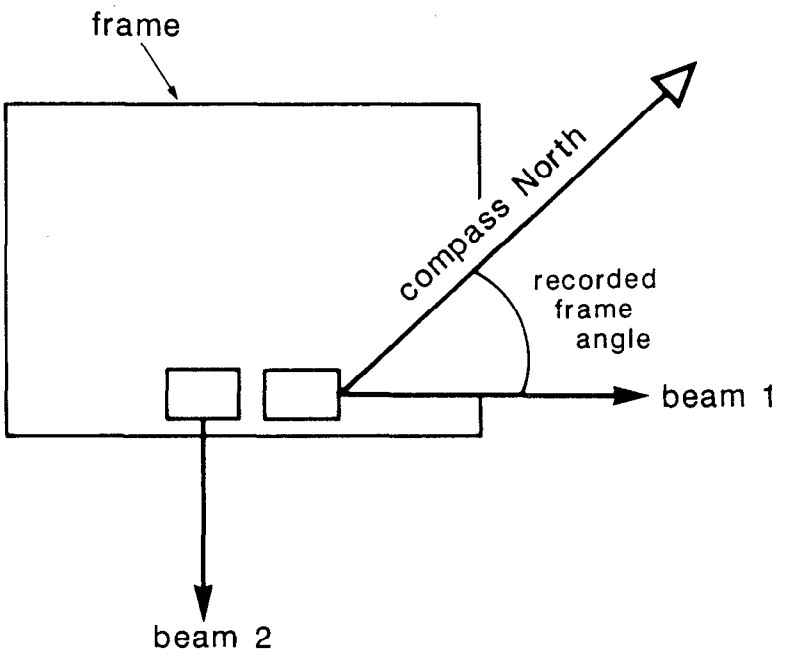


Figure 5. ADCP compass alignment.

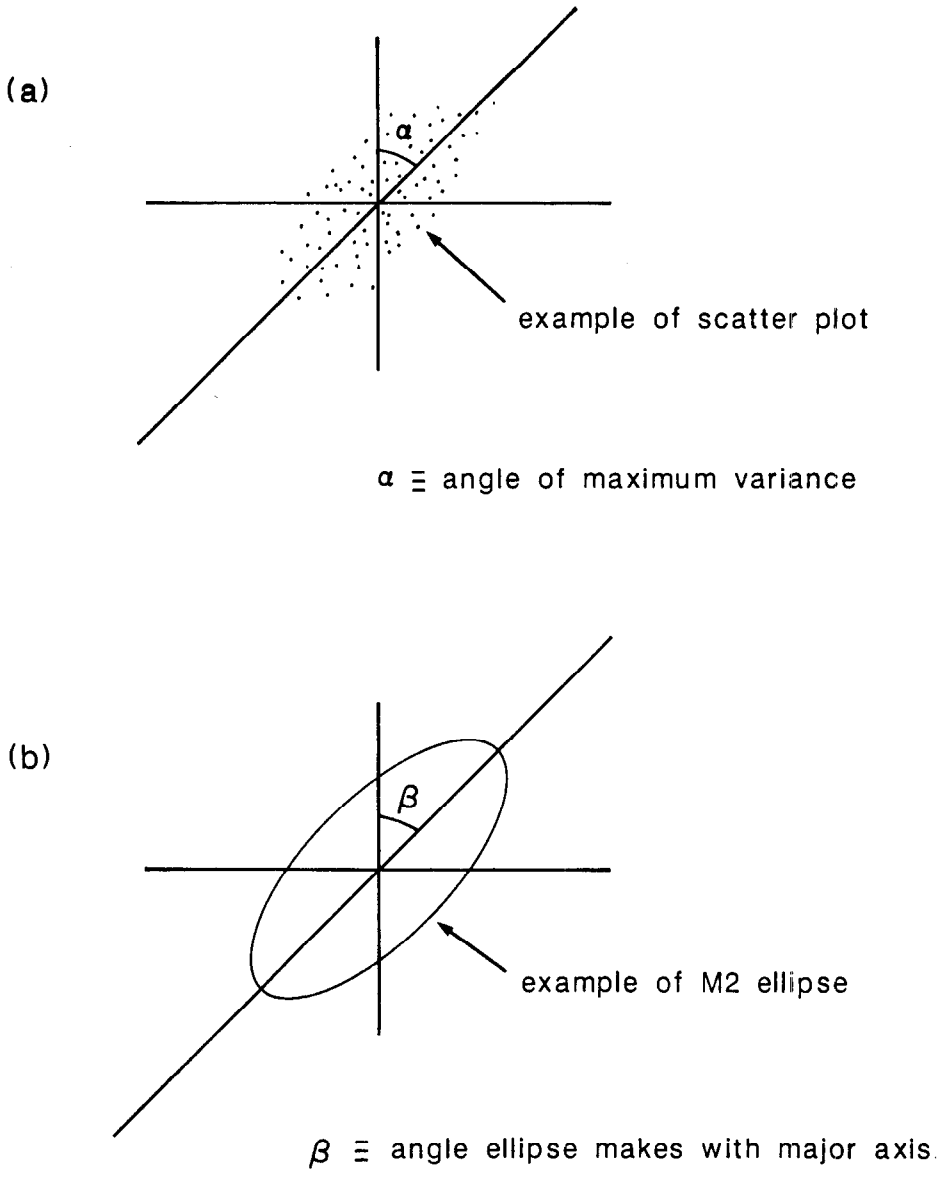


Figure 6. Diagram showing angles used in correction.

Rig information details for C33CC

Position Latitude	:	54 19.90N
Position Longitude	:	00 24.21E
Water depth	:	59.0 m
Deployed on cruise	:	C33
Recovered on cruise	:	C35
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	13-AUG-88 19:50:00
Rig recovered on	:	12-SEPT-88 06:45:00
Period of deployment	:	29.5 days
Comments	:	Launch and recovery successful

Meter information details for 0001

Rig No	:	C33CC
Meter No	:	0001
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Period of good data	:	0.0 days
Comments	:	Corrupted data set

Meter information details for 4387

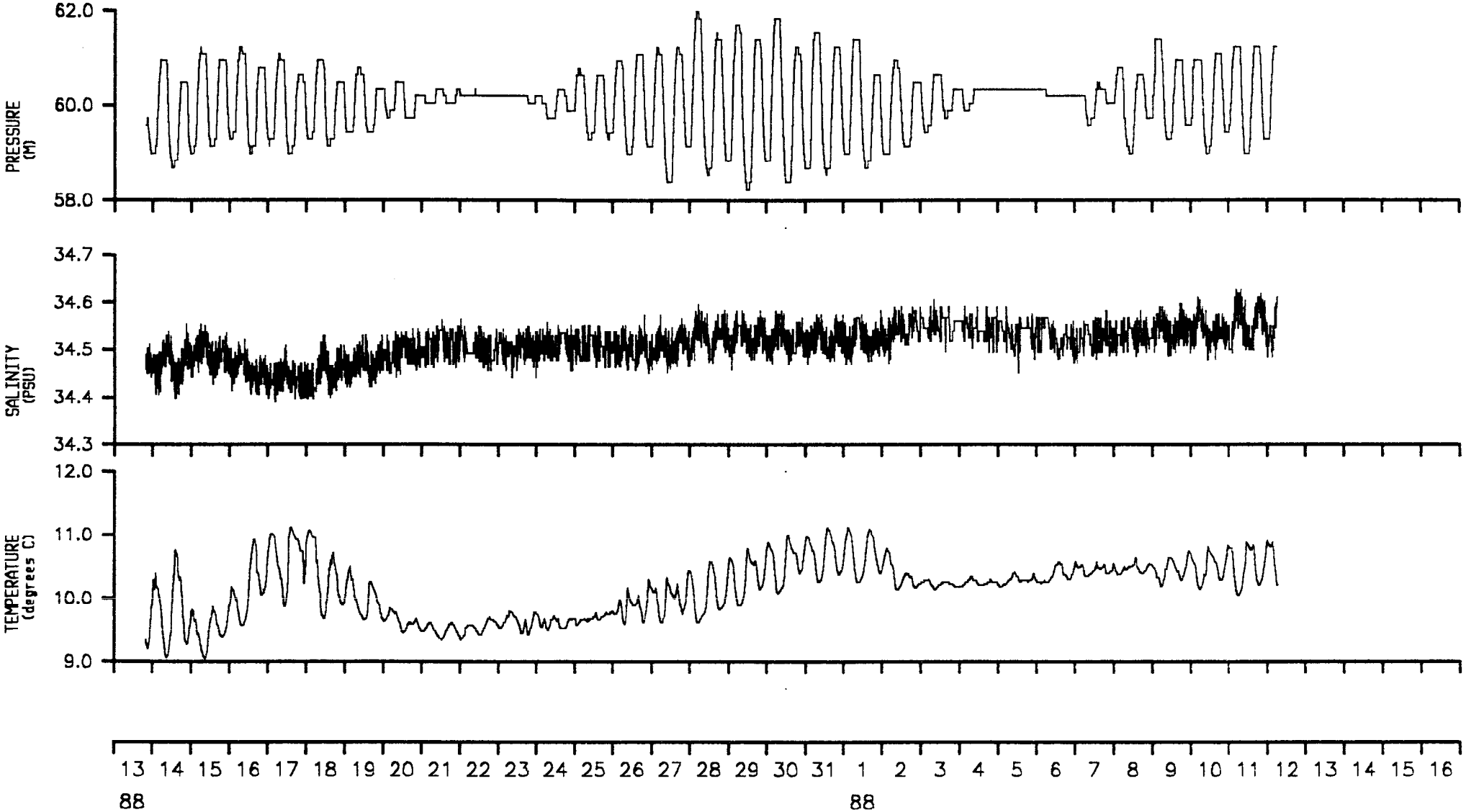
Rig No	:	C33CC
Meter No	:	4387
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AA
Meter started	:	09-AUG-88 04:50:00
Meter stopped	:	13-SEPT-88 14:09:56
Period switched on	:	35.4 days
Period of good data	:	29.5 days
Total number of scans	:	4241
Timing error	:	4 seconds fast
Comments	:	Good record obtained

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 4387 Rig no. C33CC Depth of water(m) 59.0

Start/End 1988/08/13 AT 19:50:00 1988/09/12 AT 06:45:00

Position 54 19.90N 00 24.21E Meter Height(m) 0.8



Rig information details for C36CC

Position Latitude	:	54 20.62N
Position Longitude	:	00 23.69E
Water depth	:	59.0 m
Deployed on cruise	:	C36
Recovered on cruise	:	C37
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	18-SEPT-88 19:15:00
Rig recovered on	:	09-OCT-88 14:00:00
Period of deployment	:	20.8 days
Comments	:	Launch and recovery successful

Meter information details for 0001

Rig No	:	C36CC
Meter No	:	0001
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Period of good data	:	0.0 days
Comments	:	Corrupted data set

Meter information details for 7570

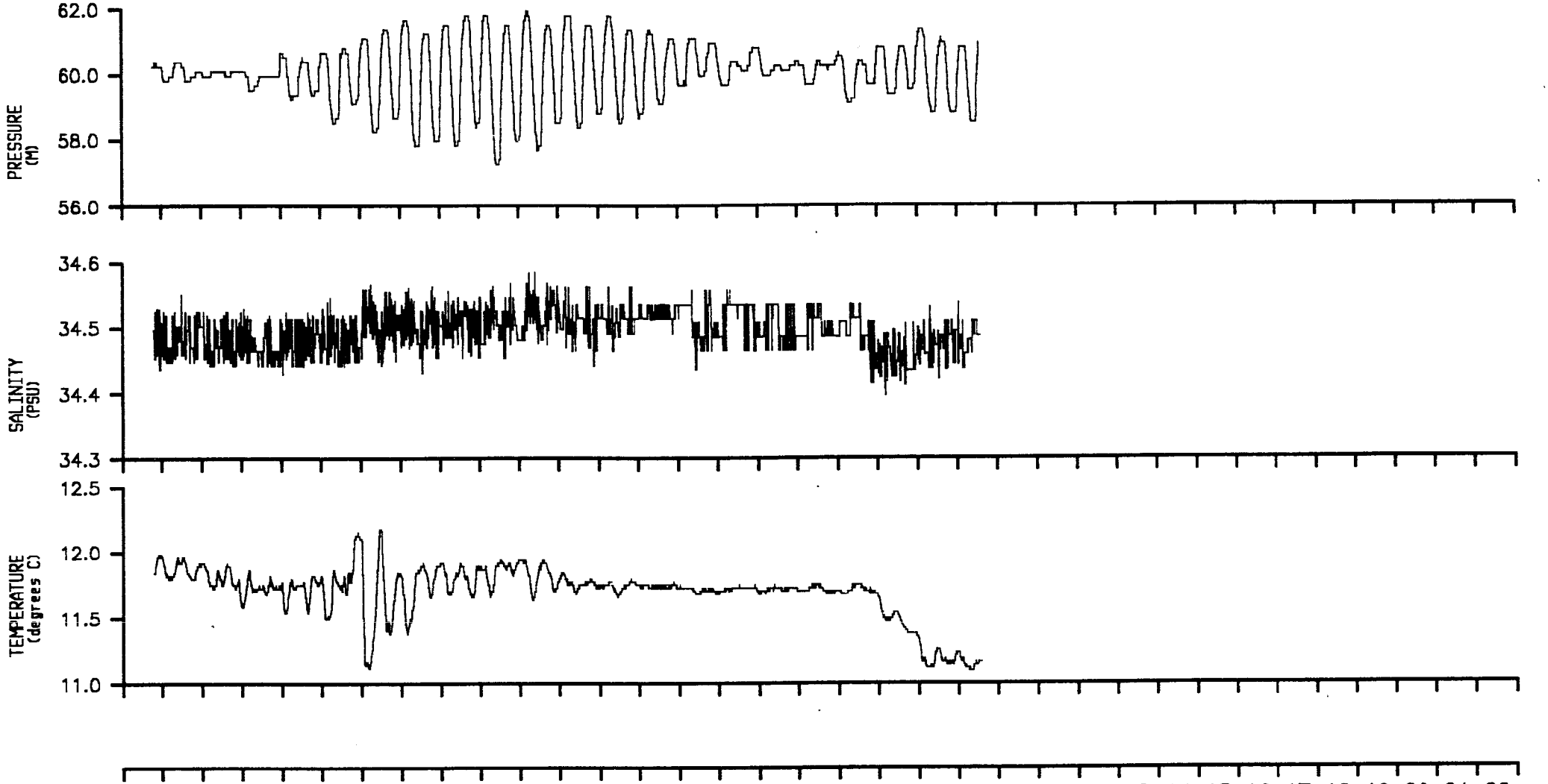
Rig No	:	C36CC
Meter No	:	7570
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AA
Meter started	:	11-SEPT-88 09:10:00
Meter stopped	:	09-OCT-88 18:00:29
Period switched on	:	28.4 days
Period of good data	:	20.8 days
Total number of scans	:	2992
Timing error	:	29 seconds slow
Comments	:	Temperature values are about 2 degrees higher than CTD cast comparisons until the last two days of the data

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 7570 Rig no. C36CC Depth of water(m) 59.0

Start/End 1988/09/18 AT 19:15:00 1988/10/09 AT 14:00:00

Position 54 20.62N 00 23.69E Meter Height(m) 0.8



Rig information details for C37CC

Position Latitude	:	54 19.99N
Position Longitude	:	00 24.22E
Water depth	:	61.0 m
Deployed on cruise	:	C37
Recovered on cruise	:	C39
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	09-OCT-88 14:50:00
Rig recovered on	:	09-NOV-88 07:20:00
Period of deployment	:	30.7 days
Comments	:	Frame moves during deployment

Meter information details for 0005

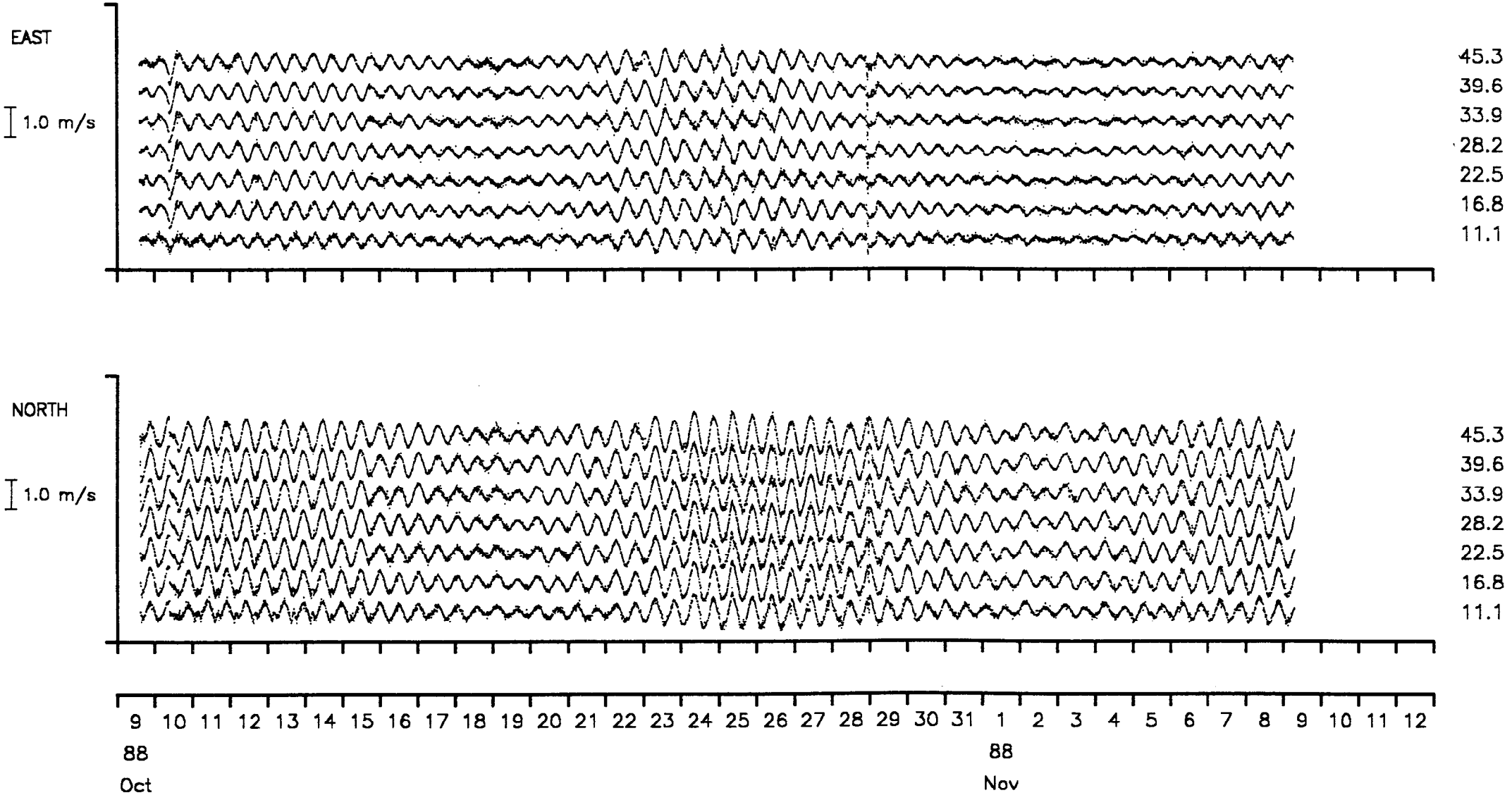
Rig No	:	C37CC
Meter No	:	0005
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	09-OCT-88 14:47:11
Time of last valid scan	:	09-NOV-88 07:17:03
Period of good data	:	30.4 days short record
Total number of scans	:	4379
Timing error	:	8 seconds fast
Comments	:	Compass does not react correctly to frame movement. Applied frame angle corrections are 37.8 degrees between scans 144 - 1775 -4.7 degrees between scans 2815 - 4523 Twenty increments of 30 minutes instead of 10 minutes every 219 scans

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0005 Rig no. C37CC Depth of water(m) 61.0

Start/End 1988/10/09 AT 14:50:00 1988/11/09 AT 07:20:00

Position 54 19.99N 00 24.22E 11.1 Base Ht 5.7 Gap Ht

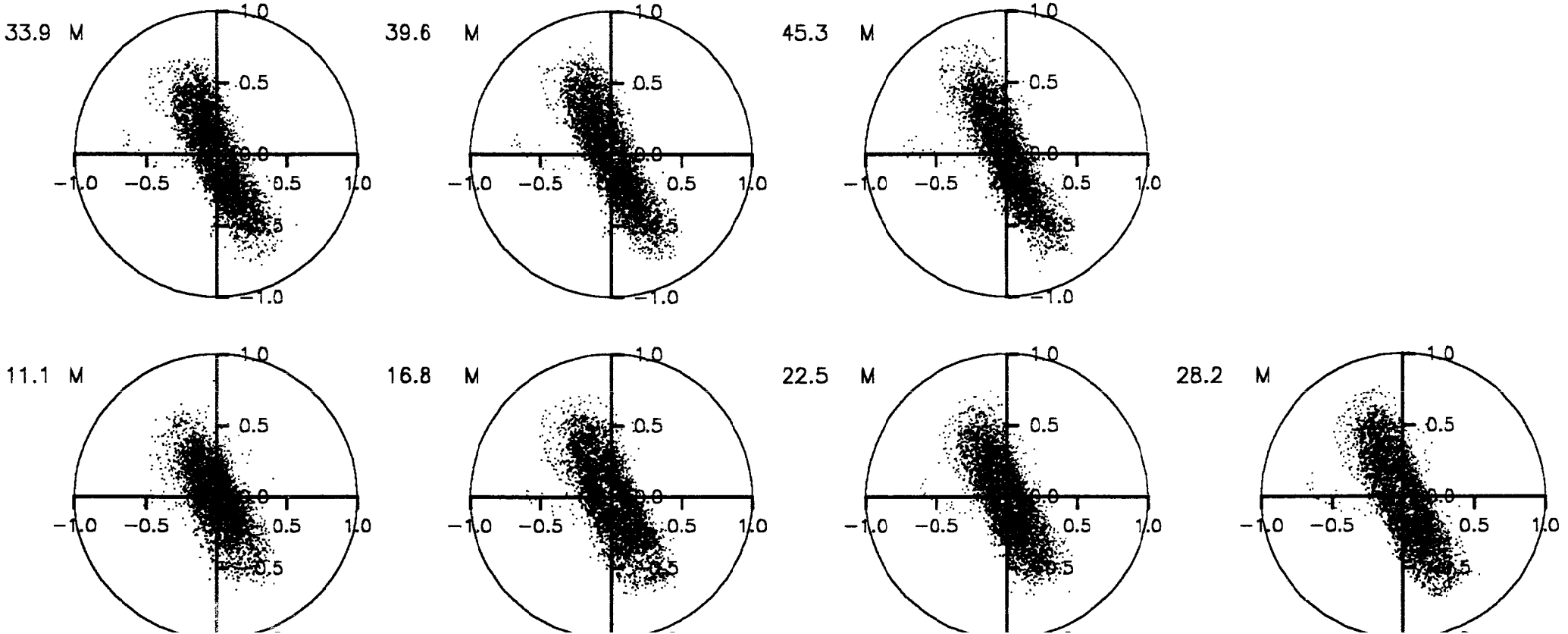


SCATTER PLOT

Meter no. 0005 Rig no. C37CC Depth of water(m) 61.0

Start/End 1988/10/09 AT 14:50:00 1988/11/09 AT 07:20:00

Position 54 19.99N 00 24.22E 11.1 Base Ht 5.7 Gap Ht

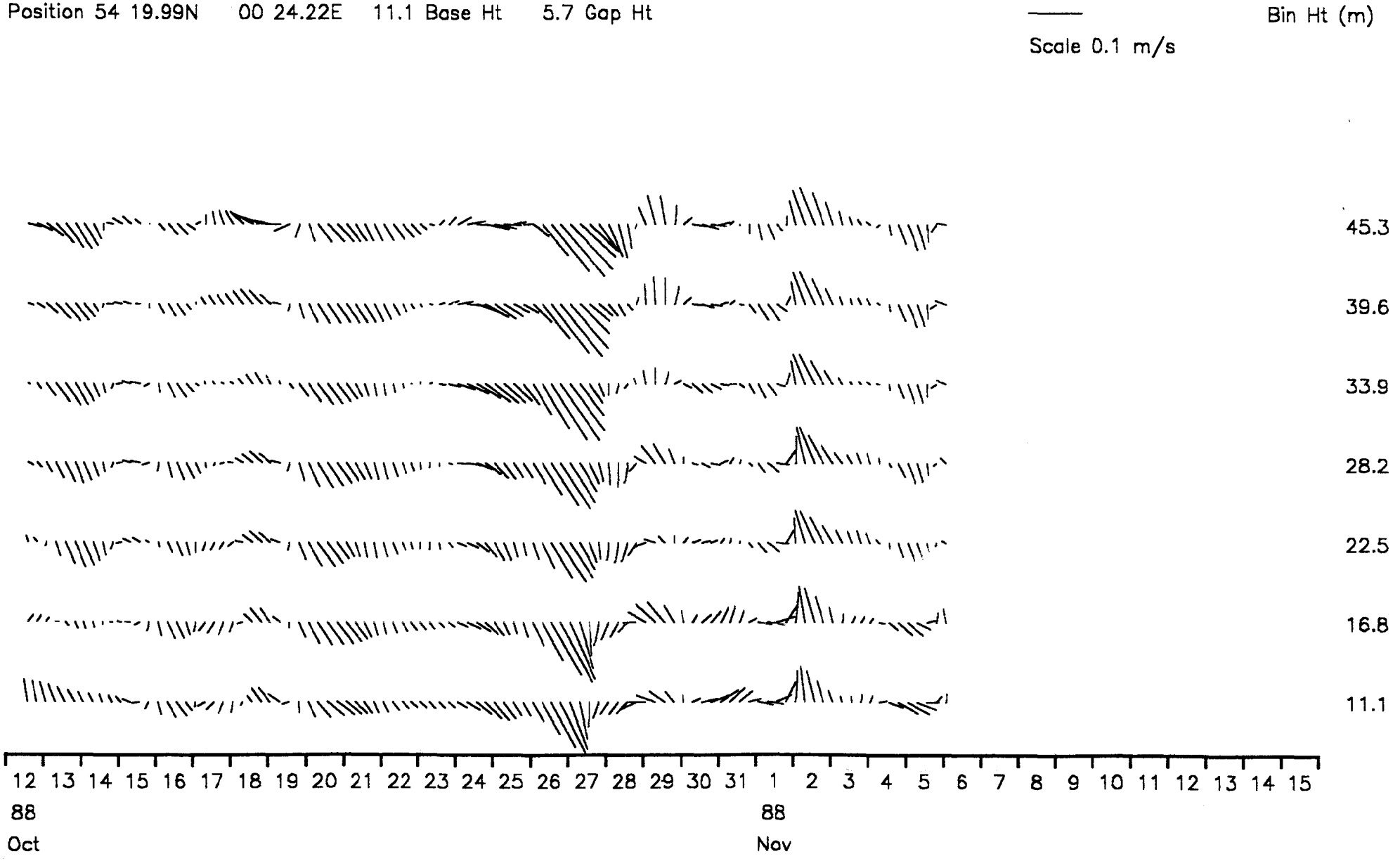


STICK TIME SERIES PLOT

Meter no. 0005 Rig no. C37CC Depth of water(m) 61.0

Start/End 1988/10/09 AT 14:50:00 1988/11/09 AT 07:20:00

Position 54 19.99N 00 24.22E 11.1 Base Ht 5.7 Gap Ht



STATISTICS FOR DP0005 C37CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.006	110.2	0.0600	-26.8	0.0092	63.2
2	16.8	0.010	133.9	0.0955	-26.4	0.0119	63.6
3	22.5	0.010	160.2	0.0899	-24.7	0.0099	65.3
4	28.2	0.011	151.1	0.1152	-24.9	0.0105	65.1
5	33.9	0.015	142.1	0.1010	-24.5	0.0089	65.5
6	39.6	0.012	130.0	0.1195	-24.7	0.0090	65.3
7	45.3	0.011	130.9	0.1164	-25.5	0.0084	64.5

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.009	127.4	0.0010	-24.9	0.0003	65.1
2	16.8	0.011	140.9	0.0012	-22.5	0.0002	67.5
3	22.5	0.012	160.6	0.0008	-27.3	0.0001	62.7
4	28.2	0.013	151.9	0.0010	-29.1	0.0001	60.9
5	33.9	0.017	142.0	0.0011	-33.9	0.0001	56.1
6	39.6	0.014	128.1	0.0012	-34.3	0.0001	55.7
7	45.3	0.014	131.0	0.0014	-35.6	0.0002	54.4

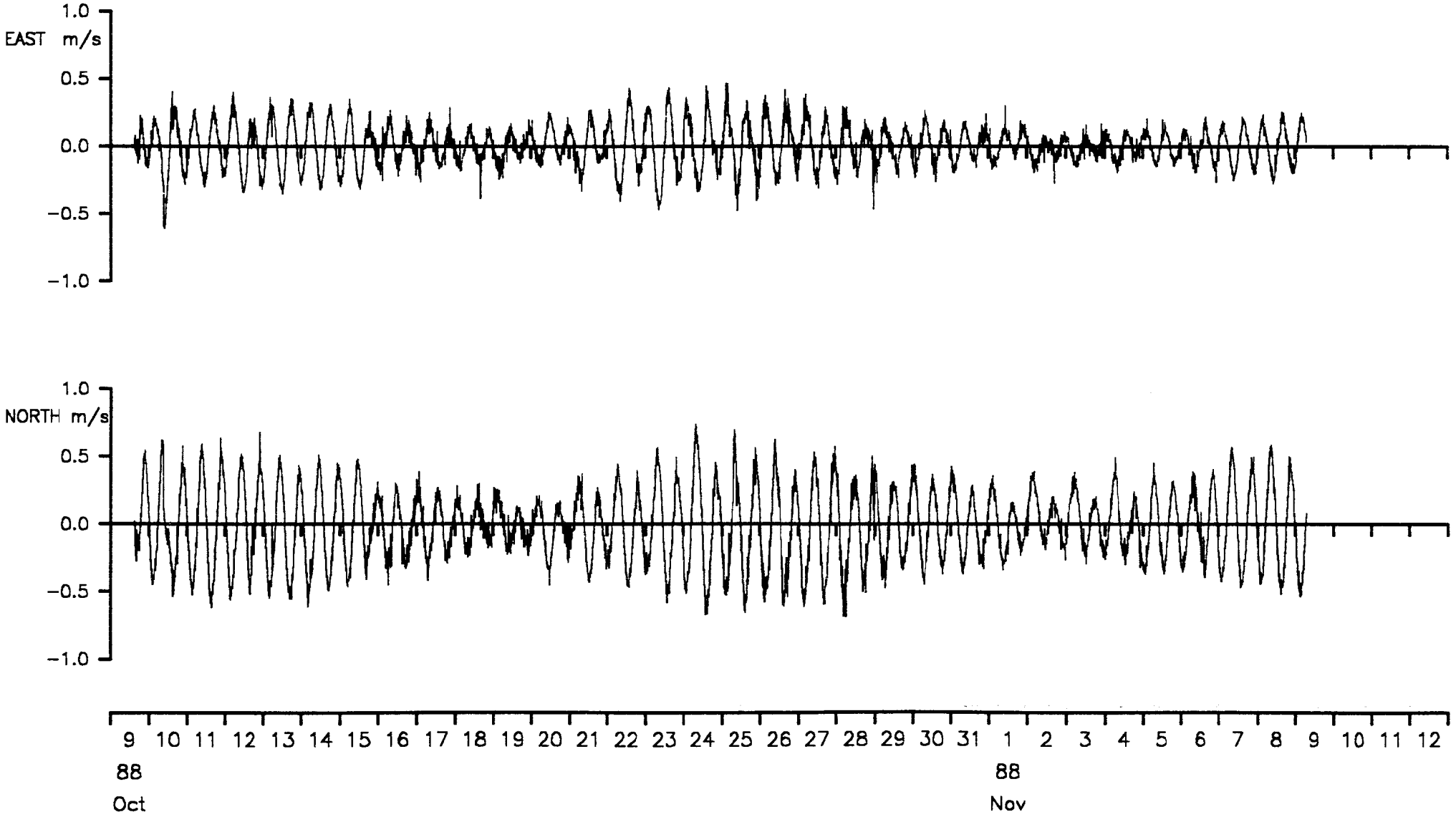
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0005 Rig no. C37CC Depth of water(m) 61.0

Start/End 1988/10/09 AT 14:50:00 1988/11/09 AT 07:20:00

Position 54 19.99N 00 24.22E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



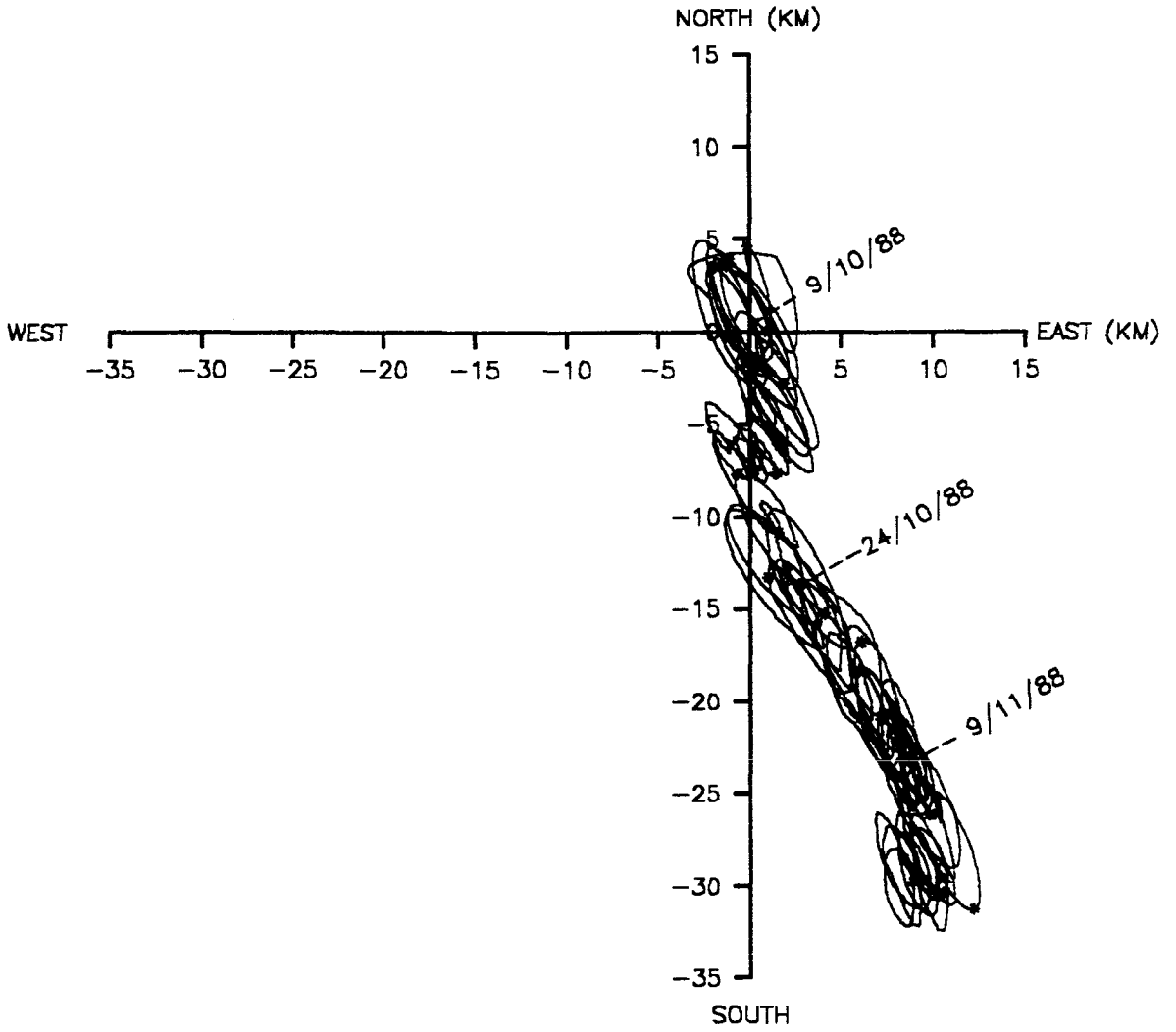
VECTOR PLOT

Meter no. 0005 Rig no. C37CC Depth of water(m) 61.0

Start/End 1988/10/09 AT 14:50:00 1988/11/09 AT 07:20:00

Position 54 19.99N 00 24.22E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0005 C37CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0032	0.23892600E-01	0.15457231E+00
Northings	-0.0090	0.75918734E-01	0.27553356E+00
Speed	0.2777	0.22786468E-01	0.15095186E+00

Vector mean speed 0.0096
Vector Mean Direction 160.2

Maximum ten values

Eastings					Northings				
0.462	0.460	0.442	0.433	0.428	0.736	0.699	0.698	0.697	0.677
0.416	0.411	0.409	0.406	0.405	0.677	0.658	0.642	0.642	0.637

Minimum ten values

Eastings					Northings				
-0.471	-0.474	-0.482	-0.523	-0.533	-0.614	-0.616	-0.626	-0.630	-0.658
-0.579	-0.580	-0.591	-0.597	-0.612	-0.660	-0.669	-0.673	-0.683	-0.689

Maximum speeds

0.802	0.744	0.739	0.738	0.736	0.731	0.714	0.699	0.697	0.697
0.696	0.682	0.681	0.680	0.679	0.679	0.678	0.678	0.674	0.673
0.673	0.667	0.665	0.664	0.664	0.663	0.663	0.661	0.661	0.658
0.658	0.657	0.655	0.655	0.654	0.653	0.653	0.651	0.649	0.648
0.647	0.646	0.645	0.644	0.643	0.642	0.642	0.641	0.640	0.640
0.639	0.636	0.636	0.635	0.633	0.633	0.631	0.631	0.630	0.630
0.630	0.629	0.629	0.628	0.626	0.624	0.623	0.623	0.623	0.622
0.622	0.622	0.621	0.621	0.620	0.620	0.618	0.617	0.616	0.616
0.616	0.615	0.614	0.614	0.614	0.613	0.613	0.613	0.613	0.612
0.610	0.610	0.609	0.607	0.607	0.606	0.605	0.604	0.604	0.603

Variance ellipse statistics

Maximum variance 0.8993E-01 Direction -24.7

Minimum variance 0.9879E-02 Direction 65.3

Total variance 0.9981E-01 Ratio of variances 0.1098E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 4.0

Average direction. maxdir +PI/2 to maxdir -PI/2 179.8

Statistics for DP0005 C37CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0040	0.23659601E-03	0.15381679E-01
Northings	-0.0115	0.64071710E-03	0.25312394E-01
Speed	0.0271	0.28411415E-03	0.16855687E-01

Vector mean speed 0.0121
Vector Mean Direction 160.6

Maximum ten values

Eastings					Northings				
0.047	0.043	0.040	0.033	0.030	0.061	0.060	0.048	0.047	0.033
0.030	0.027	0.025	0.023	0.023	0.024	0.023	0.023	0.023	0.021

Minimum ten values

Eastings					Northings				
-0.017	-0.018	-0.018	-0.019	-0.020	-0.041	-0.044	-0.045	-0.045	-0.047
-0.021	-0.022	-0.023	-0.026	-0.027	-0.048	-0.050	-0.065	-0.066	-0.073

Maximum speeds

0.087	0.078	0.077	0.066	0.064	0.058	0.056	0.055	0.054	0.052
0.052	0.049	0.048	0.047	0.045	0.039	0.039	0.038	0.038	0.038
0.037	0.036	0.036	0.035	0.035	0.035	0.033	0.032	0.031	0.031
0.030	0.030	0.029	0.029	0.029	0.029	0.028	0.028	0.028	0.027
0.027	0.027	0.027	0.027	0.027	0.026	0.025	0.025	0.024	0.024
0.024	0.023	0.023	0.023	0.022	0.022	0.022	0.021	0.021	0.021
0.019	0.019	0.018	0.017	0.017	0.017	0.017	0.016	0.016	0.016
0.016	0.016	0.015	0.014	0.014	0.014	0.013	0.013	0.013	0.013
0.012	0.012	0.012	0.012	0.012	0.011	0.011	0.011	0.010	0.010
0.010	0.010	0.009	0.009	0.008	0.008	0.007	0.006	0.003	

Variance ellipse statistics

Maximum variance 0.7872E-03 Direction -27.3

Minimum variance 0.9007E-04 Direction 62.7

Total variance 0.8773E-03 Ratio of variances 0.1144E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 -0.8

Average direction. maxdir +PI/2 to maxdir -PI/2 186.4

Meter information details for 1509

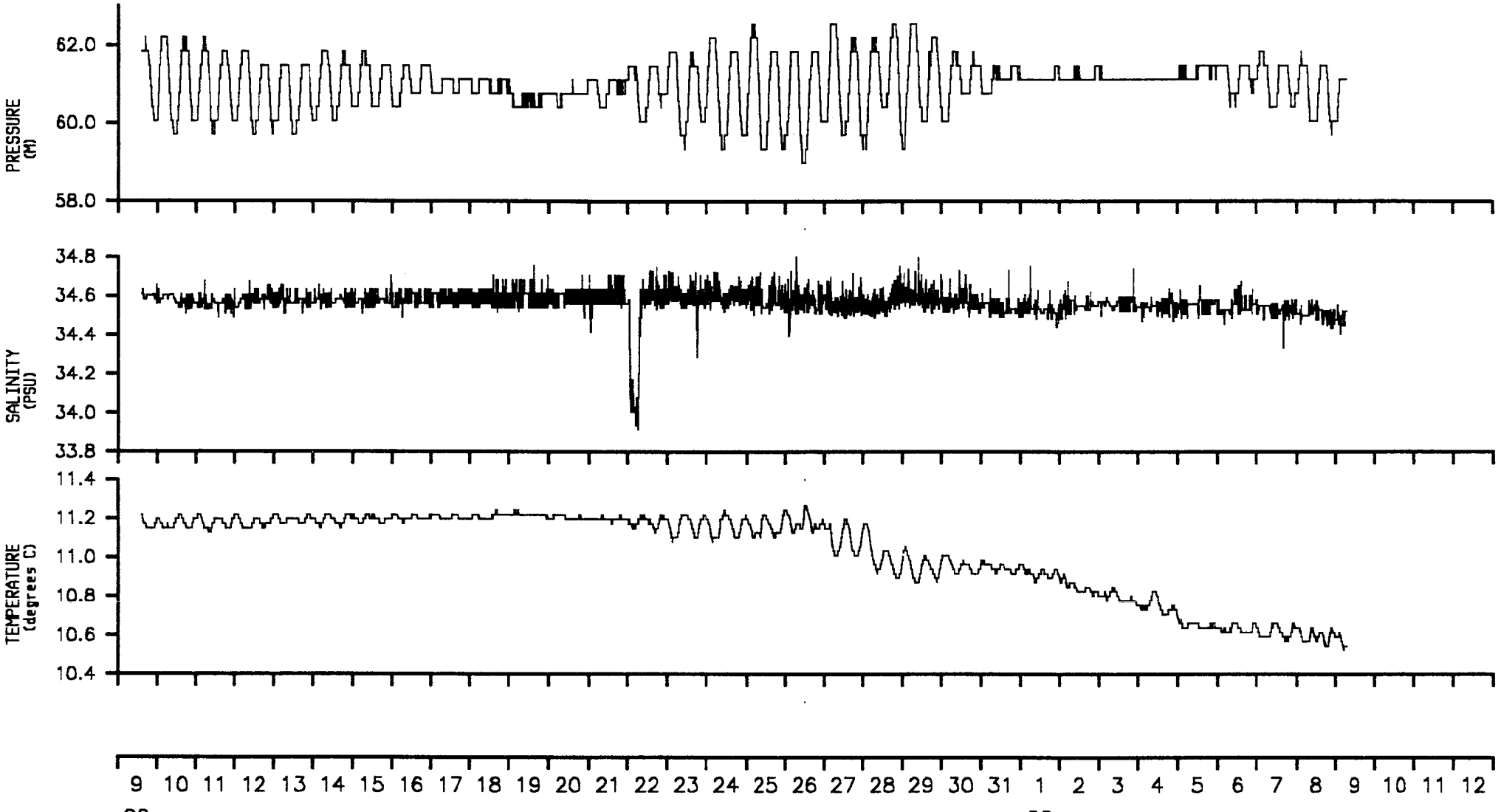
Rig No	:	C37CC
Meter No	:	1509
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AA
Meter started	:	09-OCT-88 12:40:00
Meter stopped	:	10-NOV-88 09:20:29
Period switched on	:	31.9 days
Period of good data	:	30.7 days
Total number of scans	:	4419
Timing error	:	29 seconds slow
Comments	:	Good record obtained

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 1509 Rig no. C37CC Depth of water(m) 61.0

Start/End 1988/10/09 AT 14:50:00 1988/11/09 AT 07:20:00

Position 54 19.99N 00 24.22E Meter Height(m) 0.8



Rig information details for C39CC

Position Latitude	:	54 20.04N
Position Longitude	:	00 24.59E
Water depth	:	60.0 m
Deployed on cruise	:	C39
Recovered on cruise	:	C41
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	10-NOV-88 08:00:00
Rig recovered on	:	07-DEC-88 09:40:00
Period of deployment	:	27.1 days
Comments	:	Frame moves during deployment

Meter information details for 0003

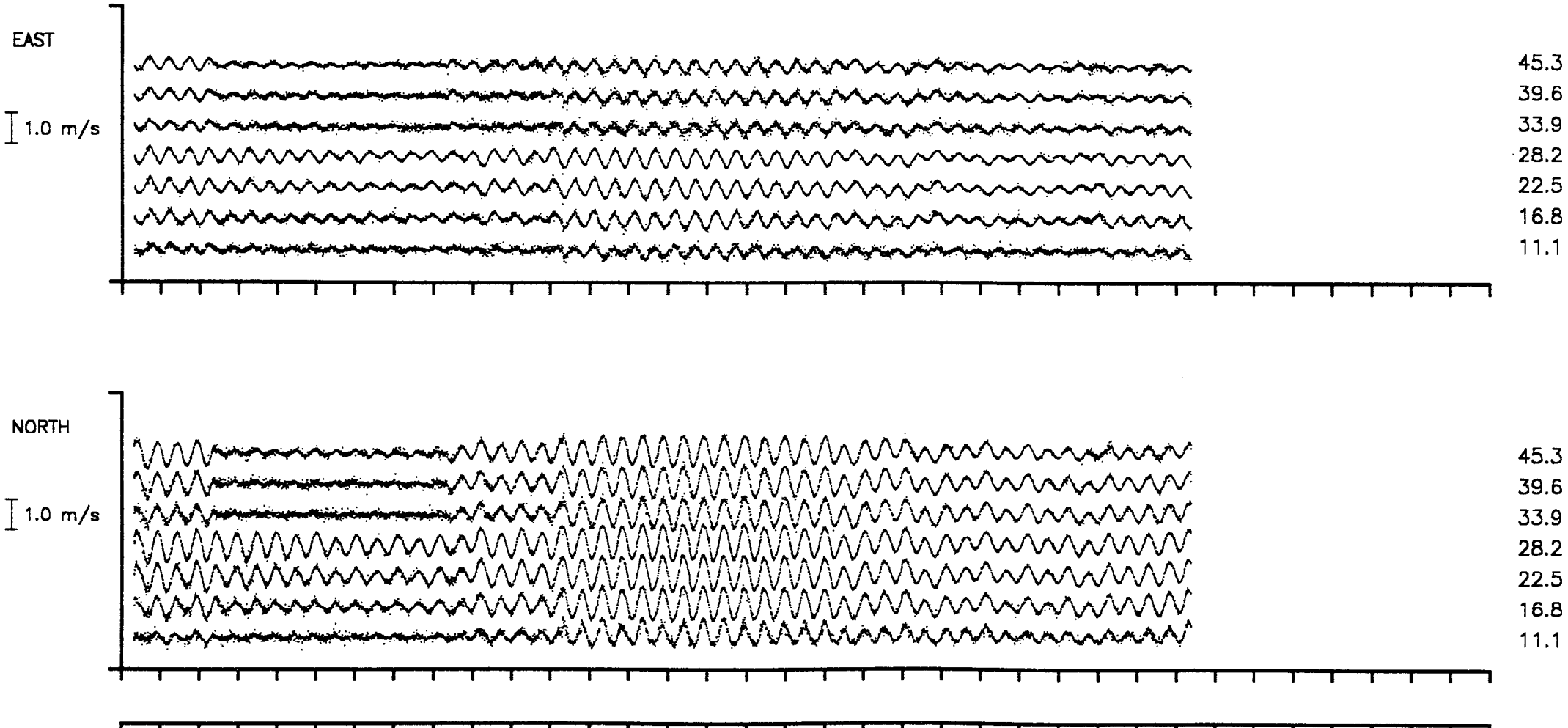
Rig No	:	C39CC
Meter No	:	0003
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	10-NOV-88 07:57:05
Meter stopped	:	07-DEC-88 11:36:55
Period switched on	:	27.2 days
Period of good data	:	27.1 days
Total number of scans	:	3898
Timing error	:	10 seconds fast
Comments	:	Compass does not react correctly to frame movement. Applied frame angle corrections are 18.8 degrees between scans 1 - 1184 53.2 degrees between scans 1185 - 1289 50.4 degrees between scans 1290 - 1581 38.1 degrees between scans 1582 - 3909

VELOCITY COMPONENT TIME SERIES PLOT

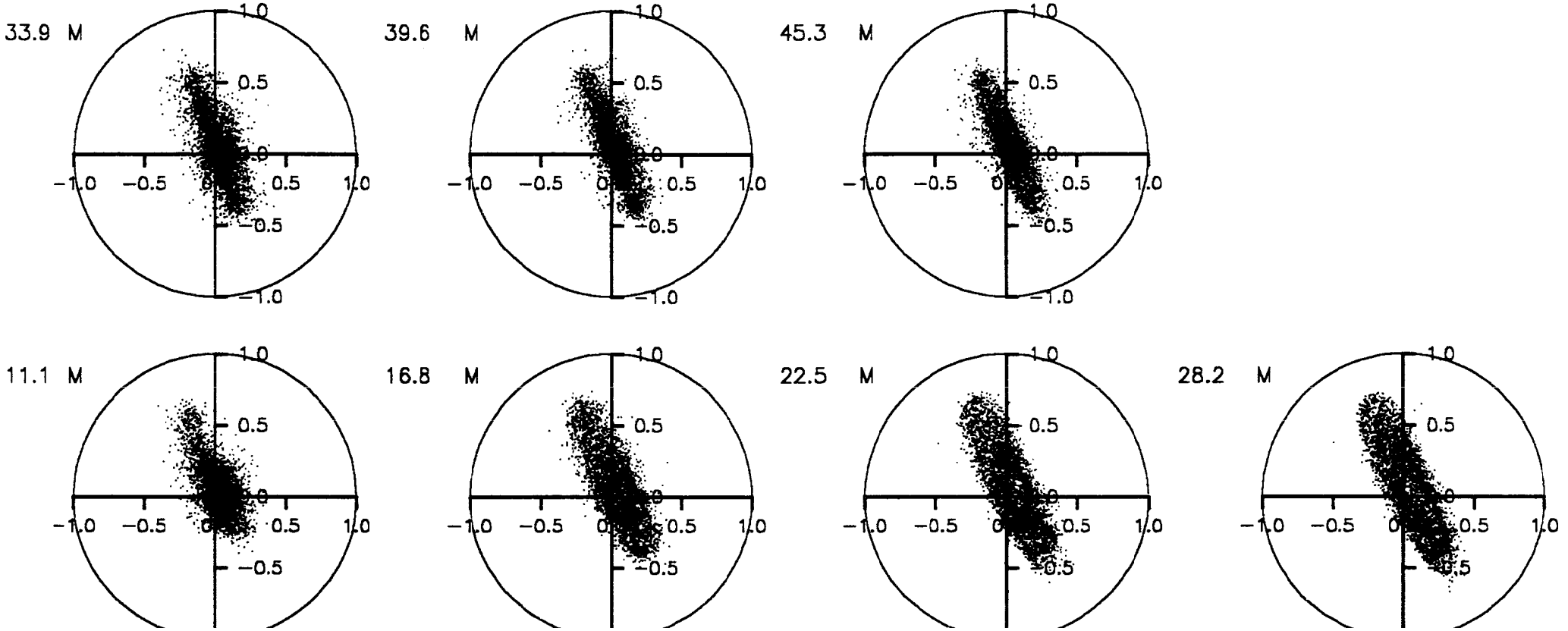
Meter no. 0003 Rig no. C39CC Depth of water(m) 60.0

Start/End 1988/11/10 AT 08:00:00 1988/12/07 AT 09:40:00

Position 54 20.04N 00 24.59E 11.1 Base Ht 5.7 Gap Ht



SCATTER PLOT
Meter no. 0003 Rig no. C39CC Depth of water(m) 60.0
Start/End 1988/11/10 AT 08:00:00 1988/12/07 AT 09:40:00
Position 54 20.04N 00 24.59E 11.1 Base Ht 5.7 Gap Ht



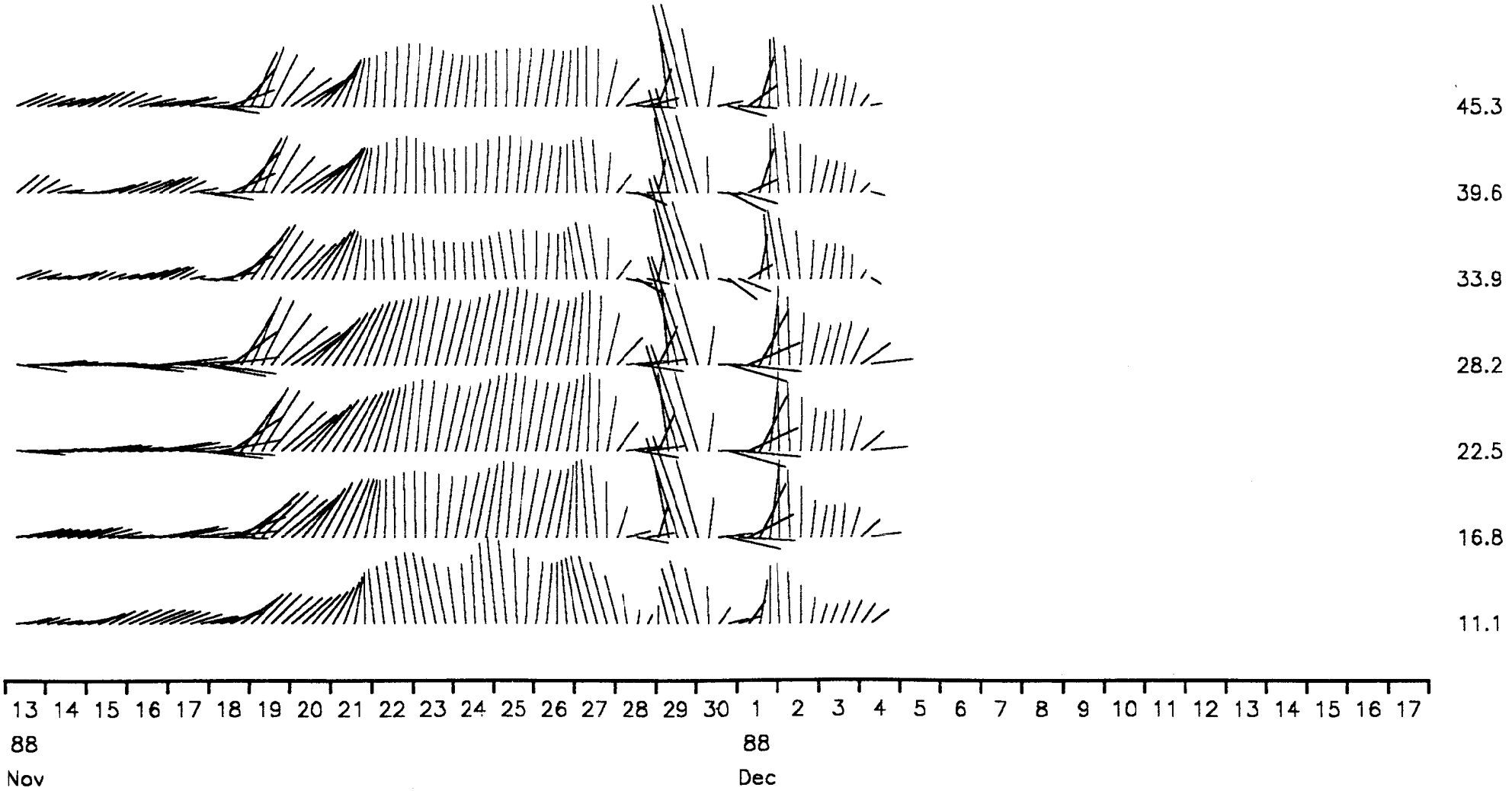
STICK TIME SERIES PLOT

Meter no. 0003 Rig no. C39CC Depth of water(m) 60.0

Start/End 1988/11/10 AT 08:00:00 1988/12/07 AT 09:40:00

Position 54 20.04N 00 24.59E 11.1 Base Ht 5.7 Gap Ht

Scale 0.1 m/s



STATISTICS FOR DP0003 C39CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.059	19.5	0.0360	-23.0	0.0057	67.0
2	16.8	0.075	30.3	0.0766	-23.9	0.0072	66.1
3	22.5	0.079	35.1	0.0957	-24.7	0.0079	65.3
4	28.2	0.080	38.5	0.1062	-24.8	0.0076	65.2
5	33.9	0.053	23.8	0.0554	-19.4	0.0056	70.6
6	39.6	0.058	28.9	0.0587	-20.4	0.0043	69.6
7	45.3	0.063	29.3	0.0579	-22.7	0.0041	67.3

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.064	16.4	0.0025	-34.4	0.0003	55.6
2	16.8	0.078	28.8	0.0035	-34.3	0.0004	55.7
3	22.5	0.084	32.5	0.0041	-32.8	0.0003	57.2
4	28.2	0.084	35.4	0.0044	-33.1	0.0003	56.9
5	33.9	0.056	19.2	0.0023	-29.7	0.0004	60.3
6	39.6	0.062	24.9	0.0025	-31.3	0.0003	58.7
7	45.3	0.068	26.5	0.0026	-32.5	0.0002	57.5

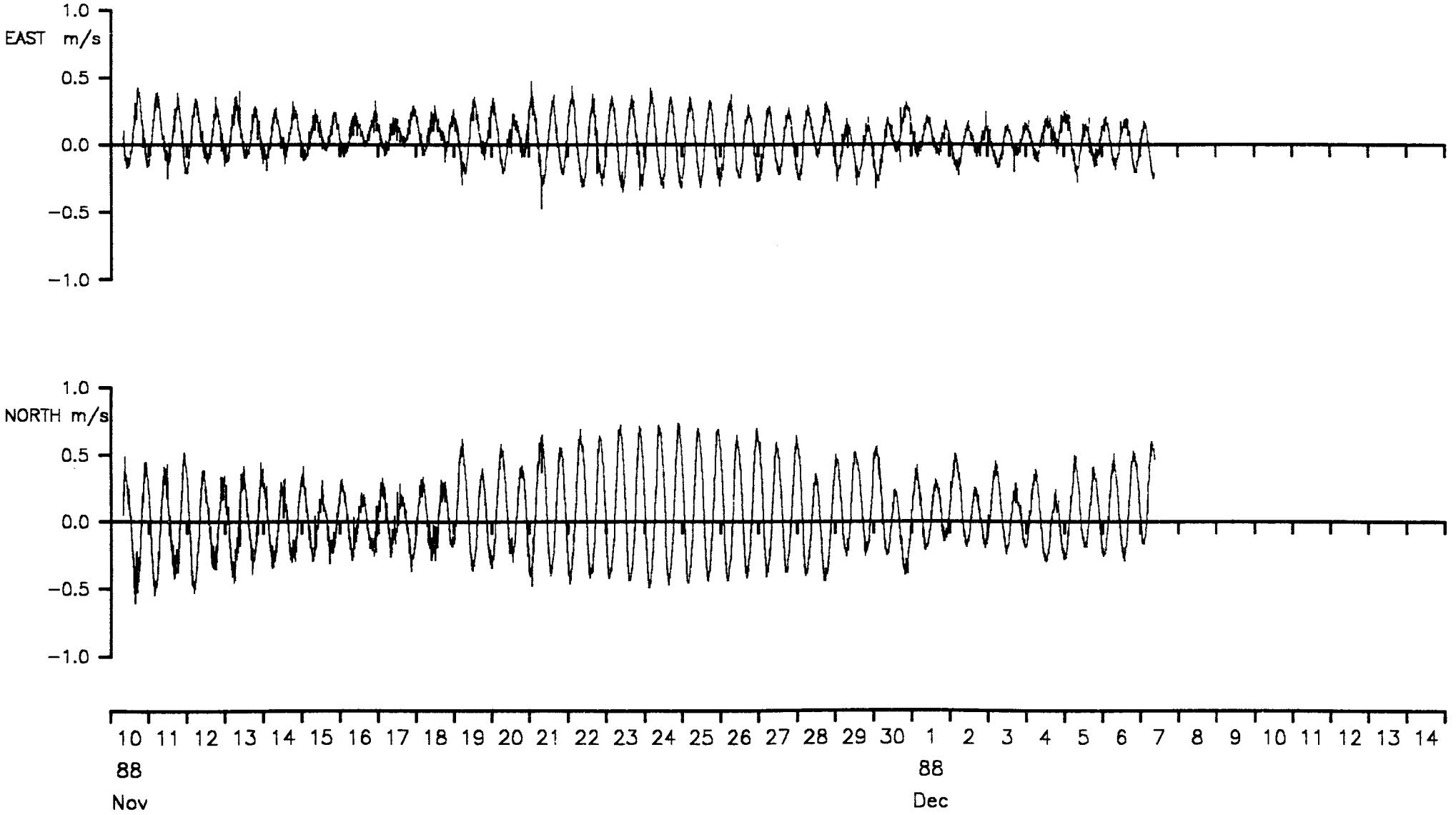
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C39CC Depth of water(m) 60.0

Start/End 1988/11/10 AT 08:00:00 1988/12/07 AT 09:40:00

Position 54 20.04N 00 24.59E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



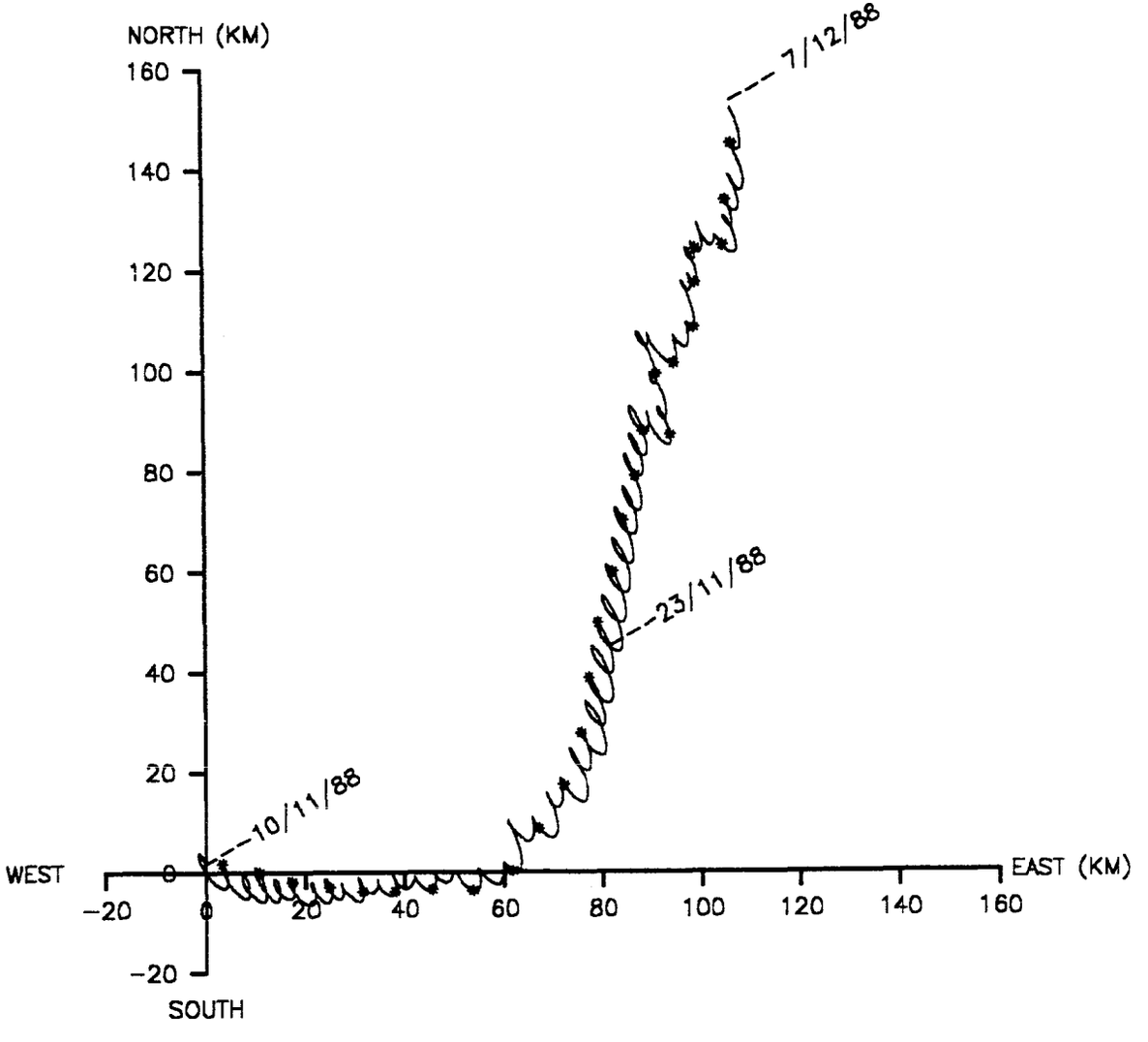
VECTOR PLOT

Meter no. 0003 Rig no. C39CC Depth of water(m) 60.0

Start/End 1988/11/10 AT 08:00:00 1988/12/07 AT 09:40:00

Position 54 20.04N 00 24.59E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0003 C39CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0457	0.23226339E-01	0.15240186E+00
Northings	0.0650	0.80357492E-01	0.28347409E+00
Speed	0.2918	0.24729997E-01	0.15725774E+00

Vector mean speed 0.0795
Vector Mean Direction 35.1

Maximum ten values

Eastings					Northings				
0.471	0.436	0.425	0.421	0.421	0.731	0.730	0.723	0.722	0.716
0.421	0.400	0.398	0.397	0.393	0.715	0.712	0.710	0.708	0.703

Minimum ten values

Eastings					Northings				
-0.315	-0.317	-0.318	-0.319	-0.322	-0.489	-0.492	-0.496	-0.498	-0.517
-0.322	-0.336	-0.336	-0.349	-0.474	-0.522	-0.529	-0.534	-0.543	-0.603

Maximum speeds

0.765	0.761	0.751	0.751	0.742	0.742	0.737	0.735	0.734	0.728
0.724	0.724	0.721	0.719	0.719	0.719	0.719	0.718	0.717	0.712
0.711	0.711	0.711	0.709	0.709	0.708	0.707	0.707	0.707	0.706
0.706	0.704	0.703	0.700	0.700	0.698	0.698	0.697	0.695	0.695
0.695	0.693	0.693	0.693	0.692	0.691	0.691	0.691	0.690	0.688
0.688	0.687	0.687	0.686	0.686	0.685	0.685	0.685	0.685	0.685
0.684	0.684	0.683	0.683	0.682	0.681	0.681	0.679	0.678	0.676
0.675	0.674	0.674	0.672	0.671	0.670	0.670	0.669	0.665	0.664
0.663	0.663	0.663	0.662	0.662	0.661	0.661	0.661	0.660	0.660
0.658	0.658	0.658	0.658	0.657	0.657	0.657	0.655	0.655	0.654

Variance ellipse statistics

Maximum variance 0.9567E-01 Direction -24.7

Minimum variance 0.7910E-02 Direction 65.3

Total variance 0.1036E+00 Ratio of variances 0.8268E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 17.0

Average direction. maxdir +PI/2 to maxdir -PI/2 163.5

Statistics for DP0003 C39CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0450	0.14370910E-02	0.37908982E-01
Northings	0.0706	0.29677900E-02	0.54477423E-01
Speed	0.1030	0.76627964E-03	0.27681760E-01

Vector mean speed 0.0838
Vector Mean Direction 32.5

Maximum ten values

Eastings					Northings				
0.112	0.108	0.107	0.105	0.100	0.184	0.182	0.137	0.136	0.135
0.098	0.091	0.090	0.089	0.089	0.135	0.134	0.134	0.132	0.130

Minimum ten values

Eastings					Northings				
0.006	0.005	0.005	0.003	-0.002	0.003	0.000	-0.001	-0.004	-0.007
-0.004	-0.018	-0.041	-0.055	-0.065	-0.007	-0.011	-0.012	-0.013	-0.028

Maximum speeds

0.195	0.191	0.143	0.136	0.136	0.135	0.135	0.135	0.132	0.132
0.131	0.130	0.128	0.126	0.125	0.125	0.124	0.124	0.124	0.122
0.121	0.120	0.120	0.120	0.119	0.119	0.119	0.118	0.117	0.116
0.116	0.114	0.114	0.113	0.113	0.113	0.113	0.113	0.113	0.109
0.109	0.107	0.107	0.107	0.106	0.105	0.104	0.104	0.101	0.101
0.098	0.096	0.093	0.092	0.091	0.091	0.091	0.090	0.088	0.084
0.082	0.079	0.077	0.077	0.076	0.075	0.074	0.074	0.074	0.073
0.073	0.071	0.071	0.070	0.070	0.070	0.067	0.065	0.064	0.063
0.063	0.062	0.061	0.060	0.051					

Variance ellipse statistics

Maximum variance 0.4059E-02 Direction -32.8

Minimum variance 0.3462E-03 Direction 57.2

Total variance 0.4405E-02 Ratio of variances 0.8530E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 48.5

Average direction. maxdir +PI/2 to maxdir -PI/2 119.6

Meter information details for 7570

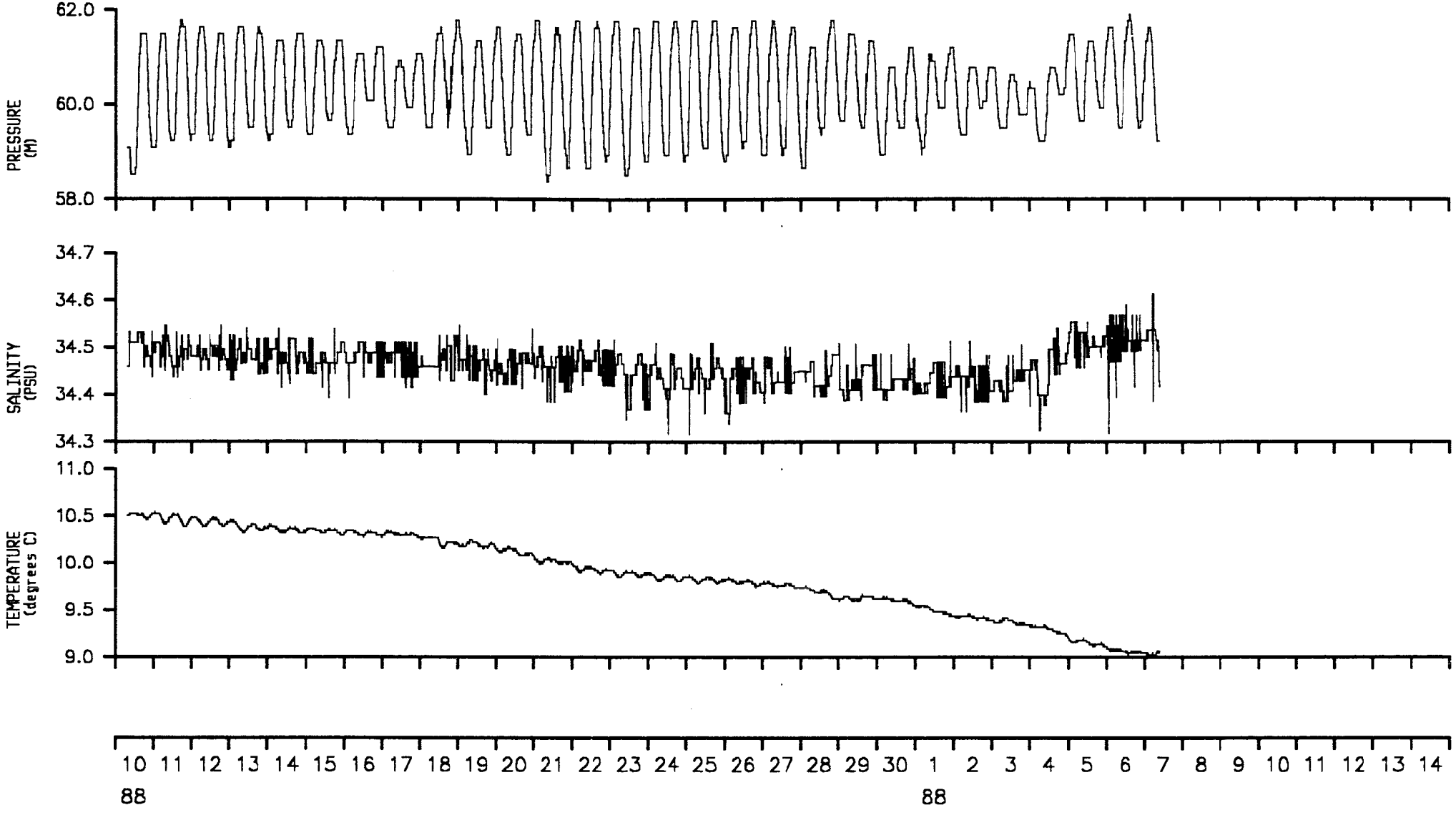
Rig No	:	C39CC
Meter No	:	7570
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AA
Meter started	:	08-NOV-88 18:20:00
Meter stopped	:	07-DEC-88 11:20:37
Period switched on	:	28.7 days
Period of good data	:	27.1 days
Total number of scans	:	3898
Timing error	:	37 seconds slow
Comments	:	Good record obtained

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 7570 Rig no. C39CC Depth of water(m) 60.0

Start/End 1988/11/10 AT 08:00:00 1988/12/07 AT 09:40:00

Position 54 20.04N 00 24.59E Meter Height(m) 0.8



Rig information details for C41CC

Position Latitude	:	54 19.96N
Position Longitude	:	00 25.02E
Water depth	:	59.0 m
Deployed on cruise	:	C41
Recovered on cruise	:	C43
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	07-DEC-88 12:40:00
Rig recovered on	:	01-JAN-89 09:50:00
Period of deployment	:	24.9 days
Comments	:	Mooring SW of original position
		In recovery phase the frame hit the side of the ship 'fairly hard'

Meter information details for 0004

Rig No	:	C41CC
Meter No	:	0004
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Period of good data	:	0.0 days
Comments	:	Corrupted data set

Meter information details for 7570

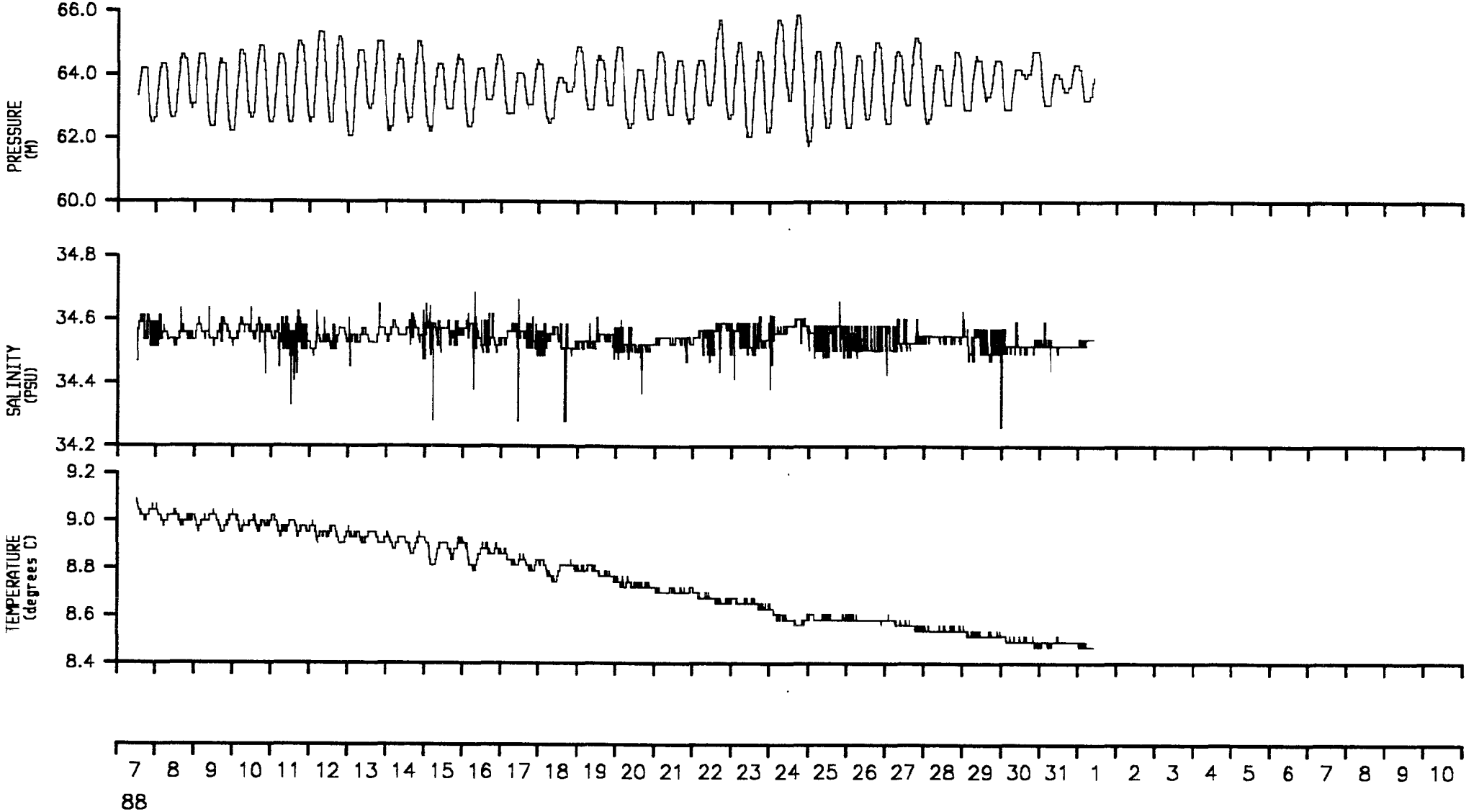
Rig No	:	C41CC
Meter No	:	7570
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AA
Meter started	:	07-DEC-88 11:40:00
Meter stopped	:	02-JAN-89 14:30:34
Period switched on	:	26.1 days
Period of good data	:	24.9 days
Total number of scans	:	3583
Timing error	:	34 seconds slow
Comments	:	Good record obtained

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 7570 Rig no. C41CC Depth of water(m) 59.0

Start/End 1988/12/07 AT 12:40:00 1989/01/01 AT 09:50:00

Position 54 19.96N 00 25.02E Meter Height(m) 0.8



Rig information details for C43CC

Position Latitude	:	54 19.91N
Position Longitude	:	00 25.30E
Water depth	:	59.0 m
Deployed on cruise	:	C43
Recovered on cruise	:	C45
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	01-JAN-89 11:10:00
Rig recovered on	:	07-FEB-89 13:30:00
Period of deployment	:	37.1 days
Comments	:	Frame moves during deployment

Meter information details for 0002

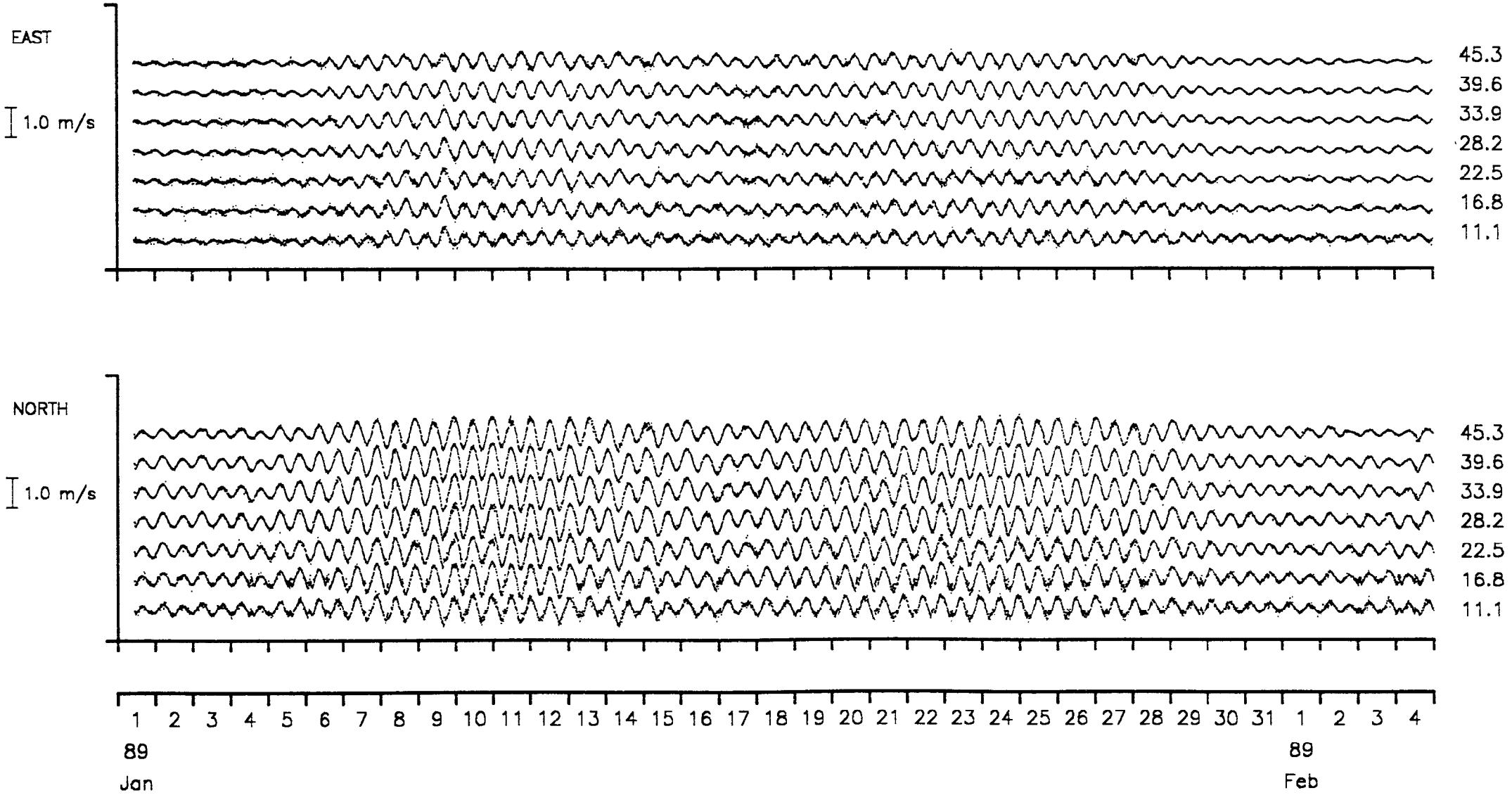
Rig No	:	C43CC
Meter No	:	0002
Frame angle correction	:	7.7 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	01-JAN-89 10:47:09
Meter stopped	:	07-FEB-89 13:47:02
Period switched on	:	37.1 days
Period of good data	:	37.1 days
Total number of scans	:	5342
Timing error	:	7 seconds fast
Comments	:	Compass reacts correctly to frame movements

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht

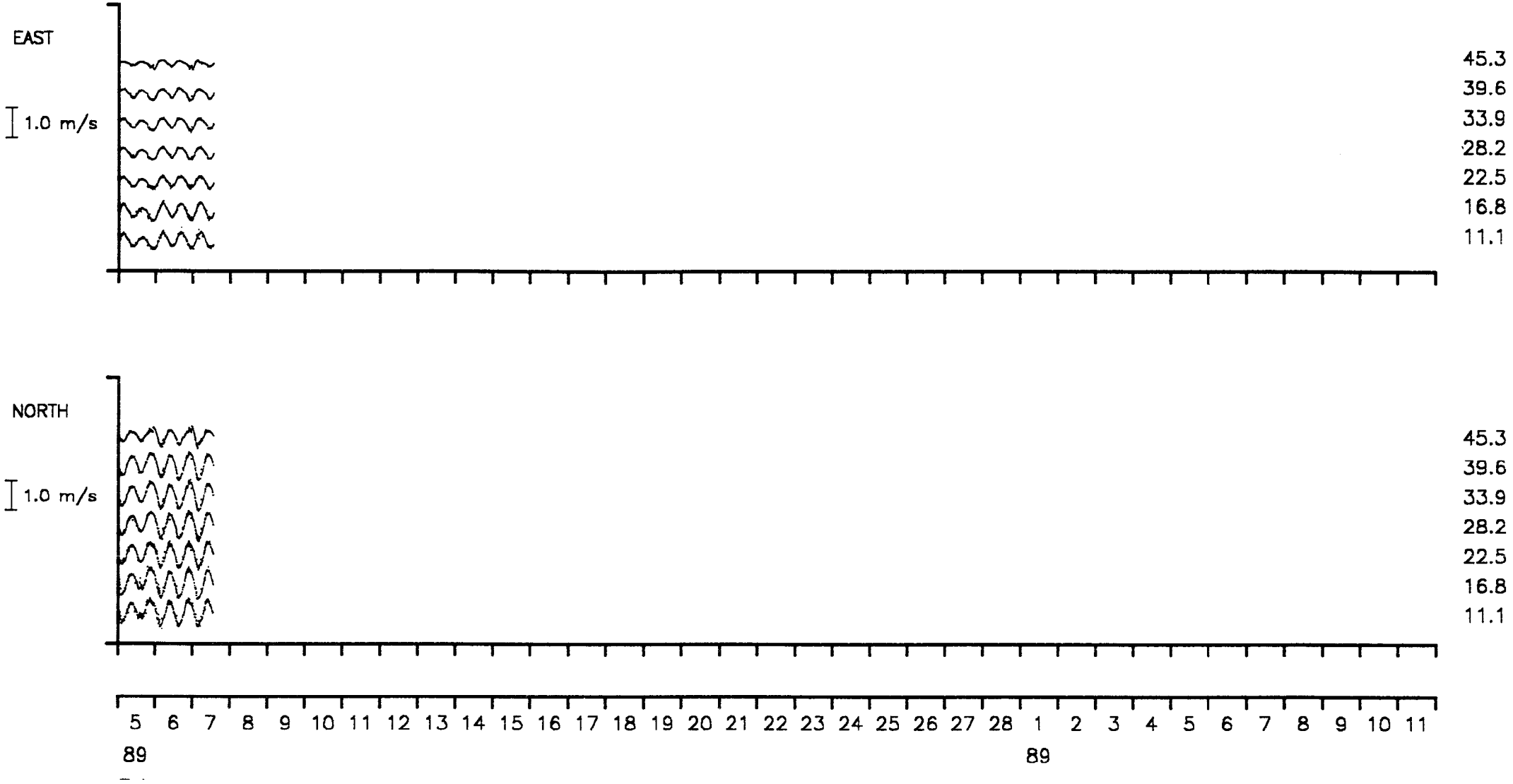


VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht

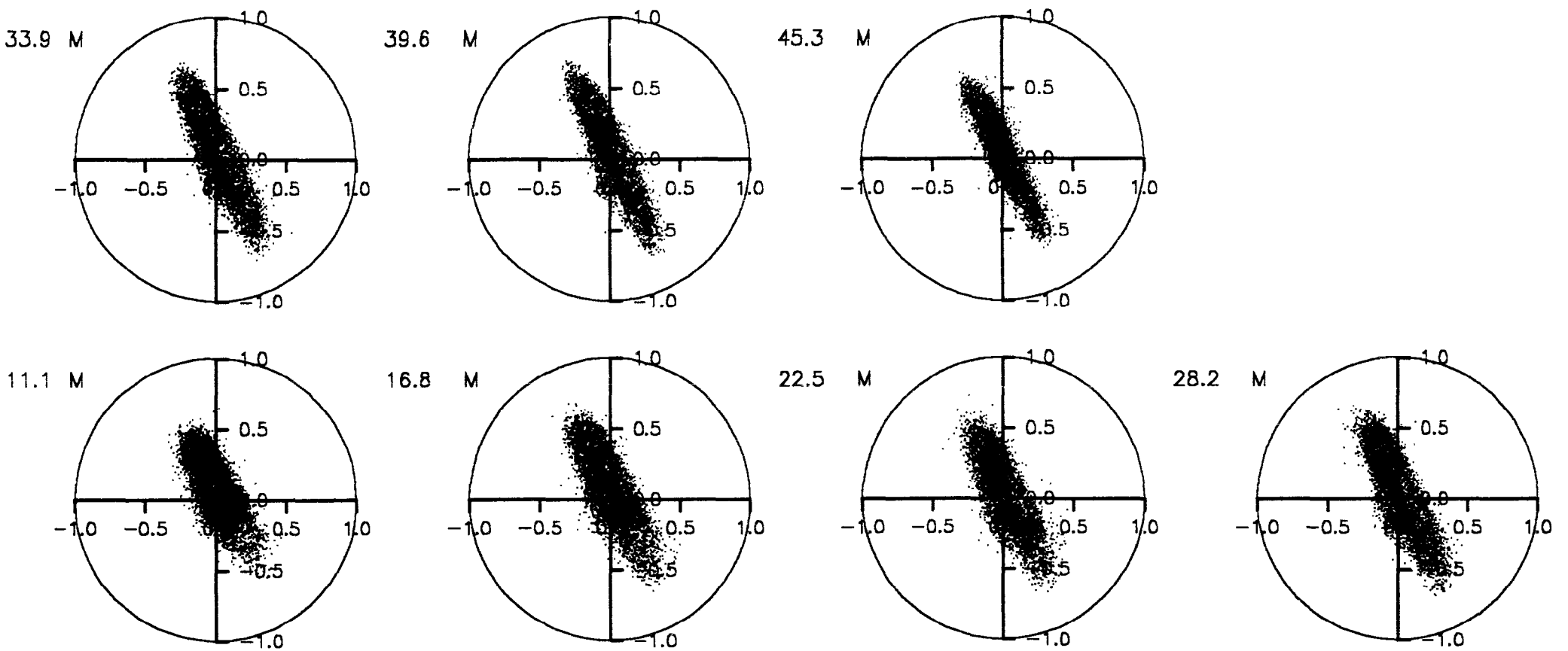


SCATTER PLOT

Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht



STICK TIME SERIES PLOT

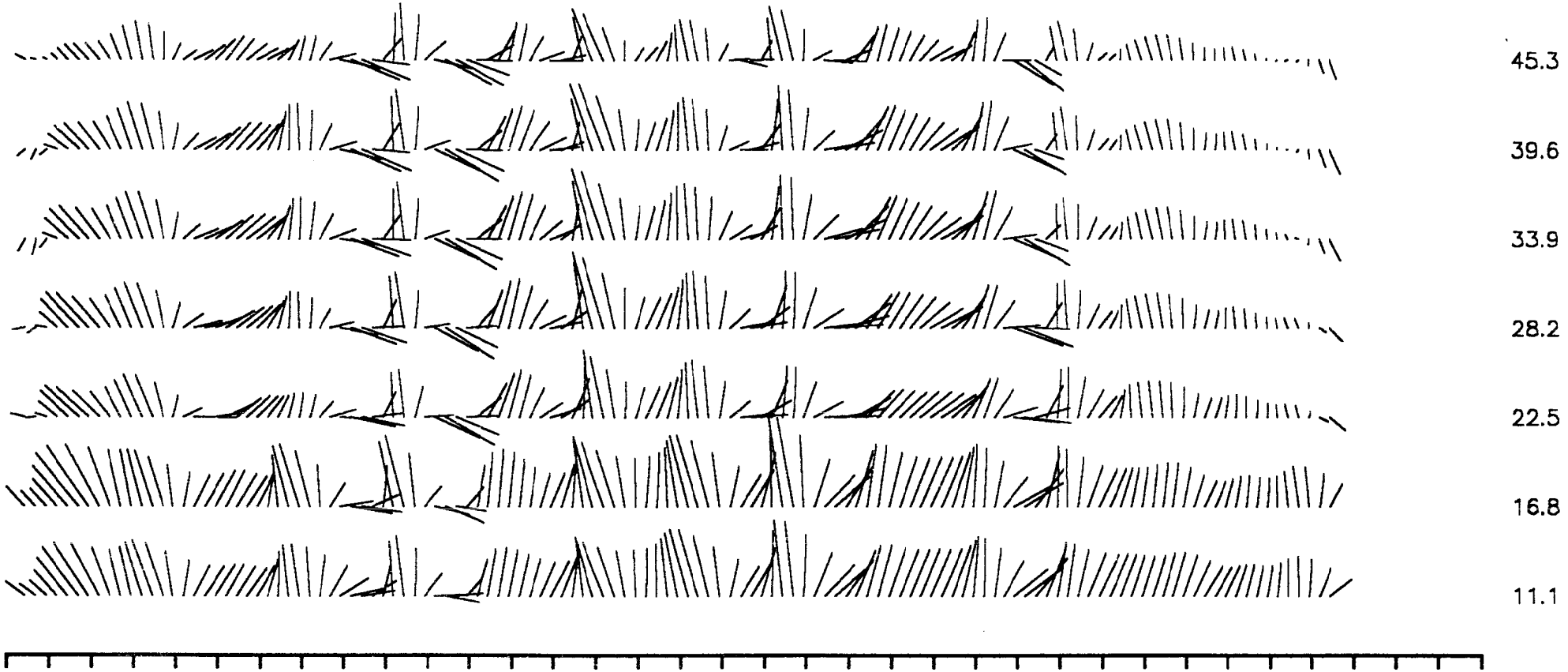
Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht

—— Bin Ht (m)

Scale 0.1 m/s



STATISTICS FOR DP0002 C43CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.065	6.7	0.0551	-26.8	0.0069	63.2
2	16.8	0.070	2.2	0.0763	-26.2	0.0070	63.8
3	22.5	0.041	19.1	0.0756	-24.7	0.0061	65.3
4	28.2	0.041	15.4	0.0911	-24.9	0.0055	65.1
5	33.9	0.040	14.9	0.0927	-24.7	0.0047	65.3
6	39.6	0.037	13.8	0.0937	-25.1	0.0039	64.9
7	45.3	0.026	20.4	0.0704	-26.3	0.0027	63.7

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.069	9.8	0.0010	-49.9	0.0003	40.1
2	16.8	0.073	6.1	0.0015	-41.0	0.0004	49.0
3	22.5	0.044	28.3	0.0015	-46.6	0.0004	43.4
4	28.2	0.045	24.8	0.0017	-42.5	0.0004	47.5
5	33.9	0.044	24.5	0.0017	-37.3	0.0005	52.7
6	39.6	0.041	23.7	0.0017	-35.9	0.0005	54.1
7	45.3	0.031	29.4	0.0013	-39.5	0.0003	50.5

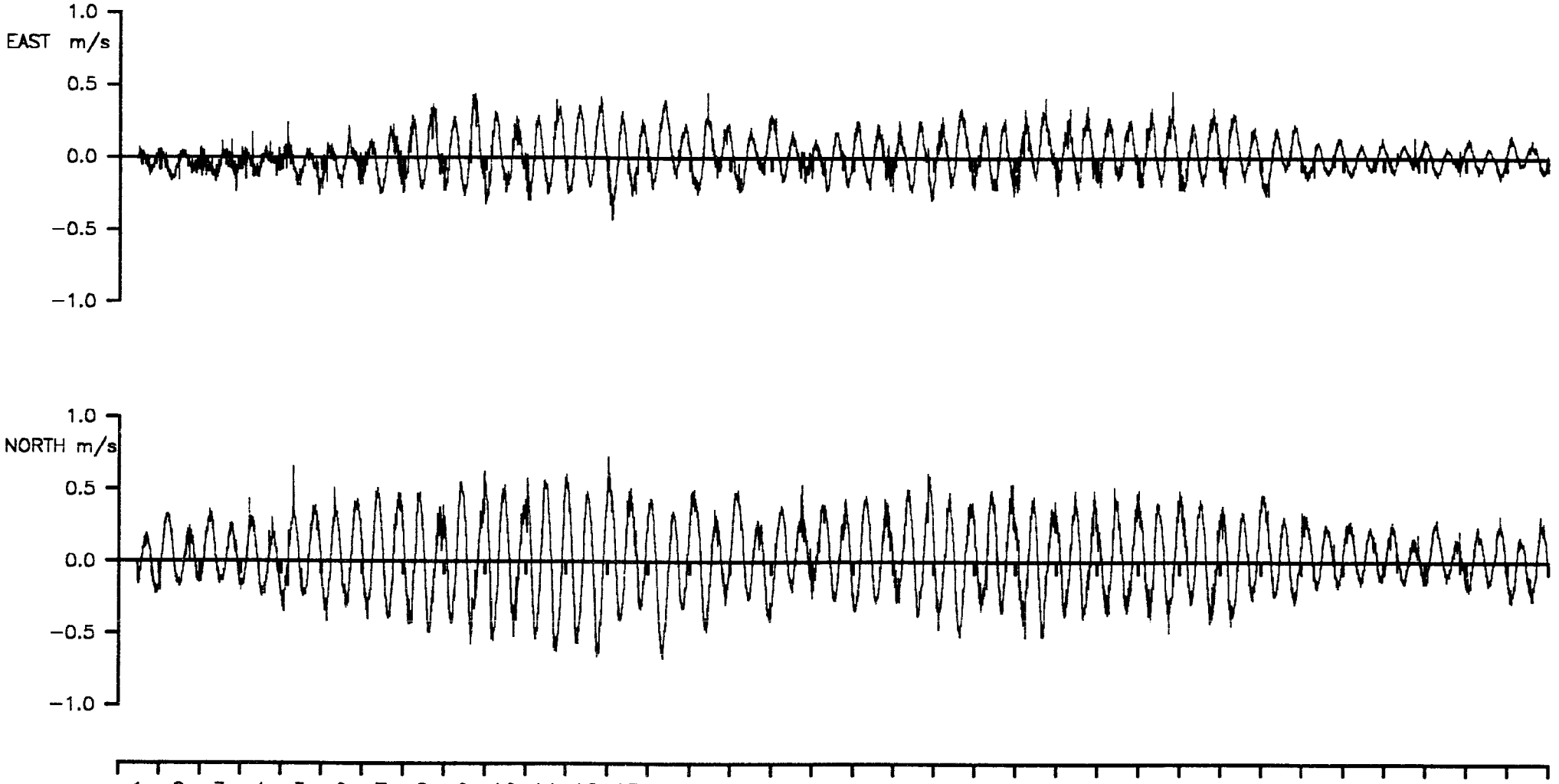
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



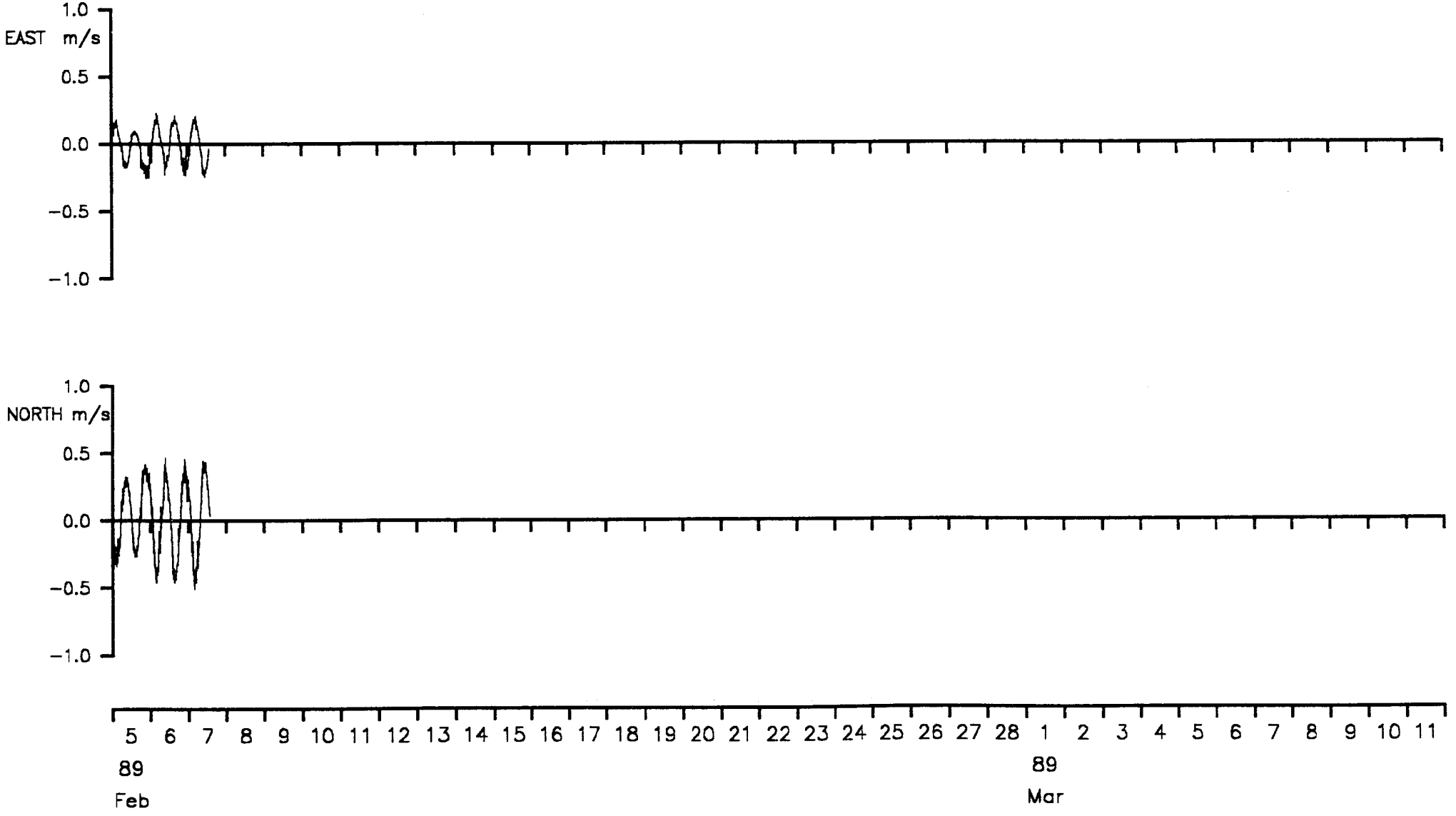
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



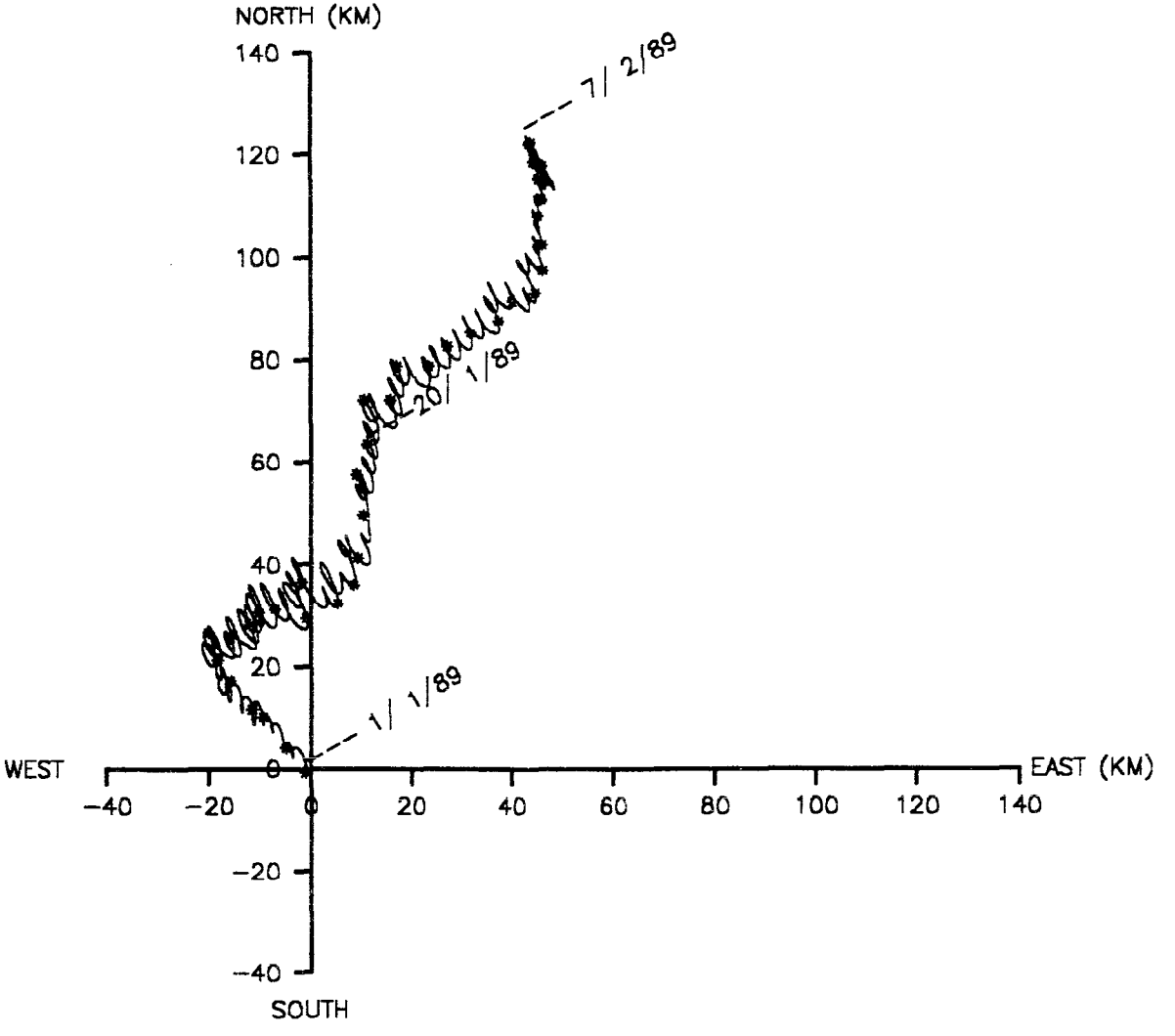
VECTOR PLOT

Meter no. 0002 Rig no. C43CC Depth of water(m) 59.0

Start/End 1989/01/01 AT 11:10:00 1989/02/07 AT 13:30:00

Position 54 19.91N 00 25.30E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0002 C43CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0134	0.18259175E-01	0.13512647E+00
Northings	0.0386	0.63480496E-01	0.25195342E+00
Speed	0.2531	0.19344993E-01	0.13908625E+00

Vector mean speed 0.0409
Vector Mean Direction 19.1

Maximum ten values

Eastings					Northings				
0.456	0.445	0.434	0.428	0.419	0.725	0.658	0.625	0.615	0.609
0.416	0.412	0.410	0.403	0.400	0.606	0.602	0.592	0.584	0.579

Minimum ten values

Eastings					Northings				
-0.294	-0.296	-0.302	-0.302	-0.320	-0.613	-0.613	-0.621	-0.622	-0.627
-0.321	-0.326	-0.344	-0.381	-0.425	-0.629	-0.637	-0.639	-0.657	-0.666

Maximum speeds

0.763	0.740	0.727	0.725	0.707	0.703	0.700	0.698	0.694	0.690
0.686	0.686	0.684	0.680	0.679	0.676	0.676	0.673	0.669	0.667
0.662	0.658	0.655	0.654	0.654	0.648	0.648	0.646	0.644	0.643
0.643	0.639	0.639	0.635	0.634	0.633	0.628	0.628	0.627	0.624
0.624	0.623	0.622	0.622	0.620	0.619	0.617	0.615	0.611	0.610
0.608	0.608	0.607	0.606	0.605	0.605	0.604	0.604	0.603	0.602
0.602	0.601	0.597	0.597	0.597	0.597	0.596	0.596	0.596	0.595
0.594	0.593	0.593	0.592	0.592	0.591	0.590	0.588	0.587	0.587
0.586	0.586	0.586	0.585	0.585	0.585	0.584	0.581	0.580	0.579
0.579	0.577	0.577	0.576	0.576	0.575	0.575	0.574	0.573	0.573

Variance ellipse statistics

Maximum variance 0.7563E-01 Direction -24.7

Minimum variance 0.6110E-02 Direction 65.3

Total variance 0.8174E-01 Ratio of variances 0.8078E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 9.3

Average direction. maxdir +PI/2 to maxdir -PI/2 174.5

Statistics for DP0002 C43CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0210	0.96144108E-03	0.31007115E-01
Northings	0.0390	0.90399338E-03	0.30066479E-01
Speed	0.0586	0.38184947E-03	0.19540966E-01

Vector mean speed 0.0443
Vector Mean Direction 28.3

Maximum ten values

Eastings					Northings				
0.084	0.078	0.077	0.076	0.076	0.113	0.103	0.099	0.096	0.092
0.075	0.073	0.073	0.070	0.070	0.086	0.085	0.084	0.084	0.081

Minimum ten values

Eastings					Northings				
-0.027	-0.028	-0.028	-0.030	-0.031	-0.004	-0.008	-0.008	-0.009	-0.015
-0.034	-0.045	-0.045	-0.055	-0.055	-0.016	-0.022	-0.029	-0.035	-0.046

Maximum speeds

0.114	0.105	0.099	0.097	0.096	0.093	0.086	0.086	0.084	0.084
0.084	0.083	0.082	0.081	0.081	0.080	0.079	0.078	0.078	0.077
0.077	0.076	0.076	0.076	0.076	0.075	0.074	0.074	0.074	0.073
0.071	0.071	0.070	0.070	0.070	0.070	0.069	0.069	0.069	0.068
0.068	0.068	0.068	0.066	0.066	0.065	0.063	0.063	0.063	0.063
0.063	0.063	0.062	0.062	0.062	0.062	0.061	0.061	0.061	0.061
0.060	0.060	0.059	0.059	0.059	0.059	0.058	0.058	0.057	0.057
0.056	0.056	0.056	0.055	0.055	0.054	0.054	0.054	0.053	0.053
0.053	0.053	0.052	0.052	0.052	0.052	0.050	0.050	0.050	0.050
0.048	0.048	0.046	0.046	0.046	0.045	0.045	0.044	0.044	0.042

Variance ellipse statistics

Maximum variance 0.1455E-02 Direction -46.6

Minimum variance 0.4108E-03 Direction 43.4

Total variance 0.1865E-02 Ratio of variances 0.2824E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 49.4

Average direction. maxdir +PI/2 to maxdir -PI/2 121.9

Rig information details for C45CC

Position Latitude	:	54 19.96N
Position Longitude	:	00 25.26E
Water depth	:	59.0 m
Deployed on cruise	:	C45
Recovered on cruise	:	C47
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	07-FEB-89 14:10:00
Rig recovered on	:	07-MAR-89 07:20:00
Period of deployment	:	27.7 days
Comments	:	Launch and recovery successful

Meter information details for 0003

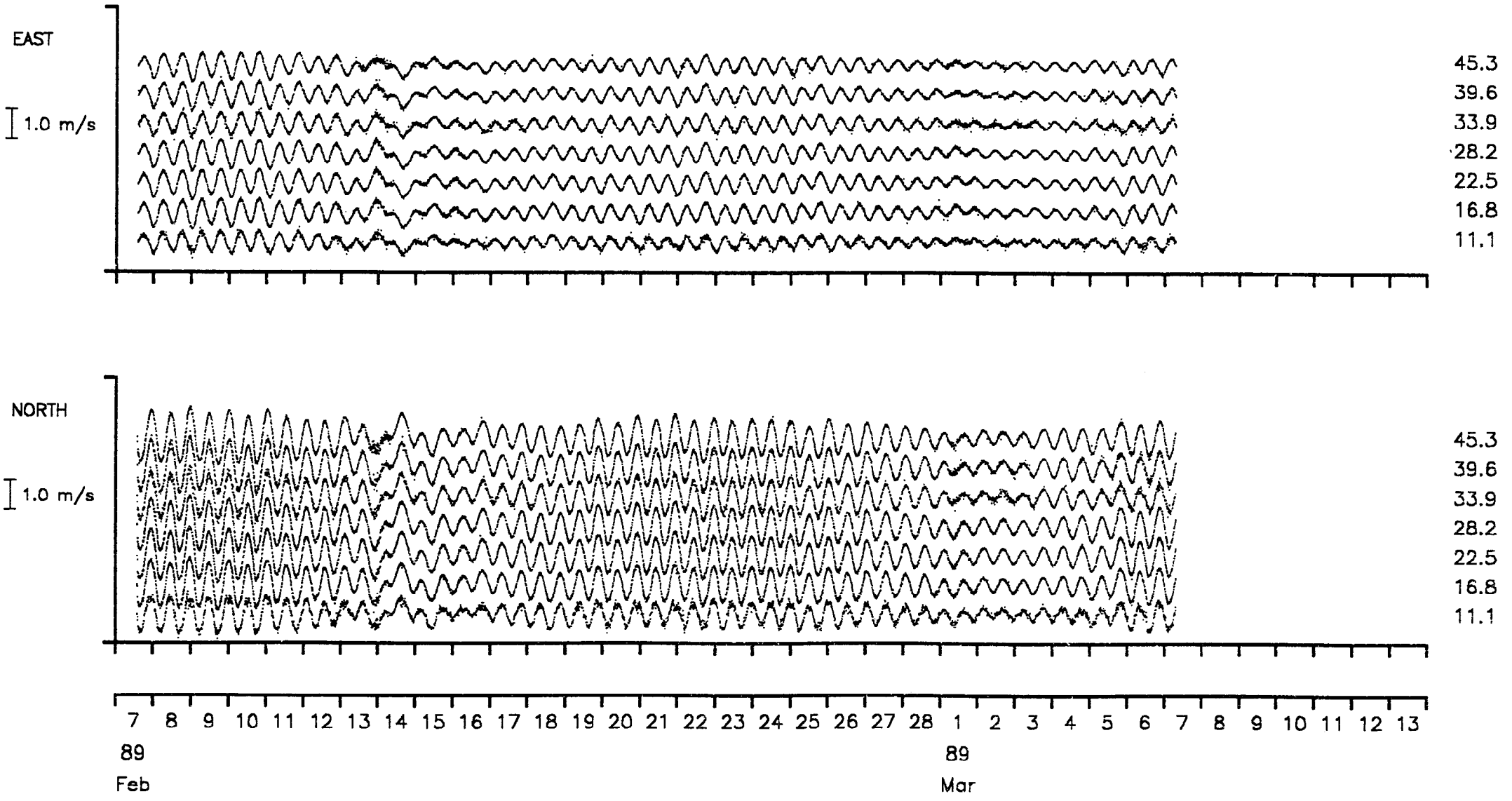
Rig No	:	C45CC
Meter No	:	0003
Frame angle correction	:	41.7 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	07-FEB-89 14:06:50
Meter stopped	:	07-MAR-89 07:36:51
Period switched on	:	27.7 days
Period of good data	:	27.7 days
Total number of scans	:	3991
Timing error	:	1 second slow
Comments	:	Manually recorded start and stop times used due to timing channel corruption

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C45CC Depth of water(m) 59.0

Start/End 1989/02/07 AT 14:10:00 1989/03/07 AT 07:20:00

Position 54 19.96N 00 25.26E 11.1 Base Ht 5.7 Gap Ht

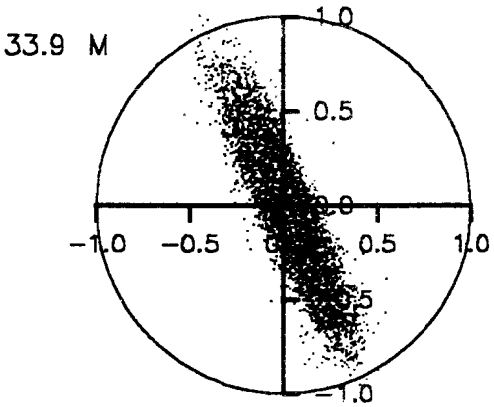


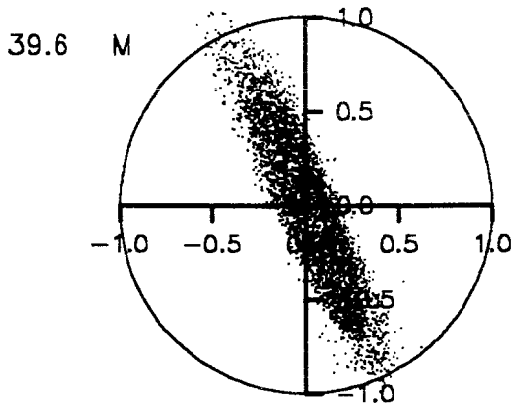
SCATTER PLOT

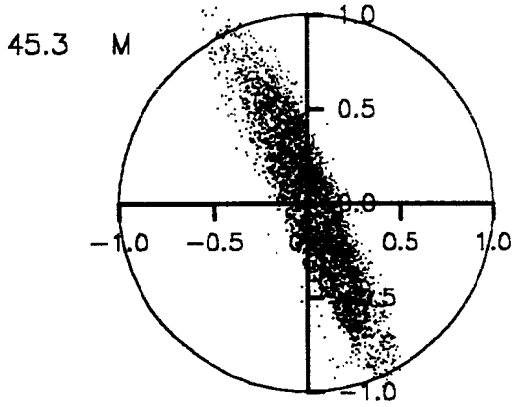
Meter no. 0003 Rig no. C45CC Depth of water(m) 59.0

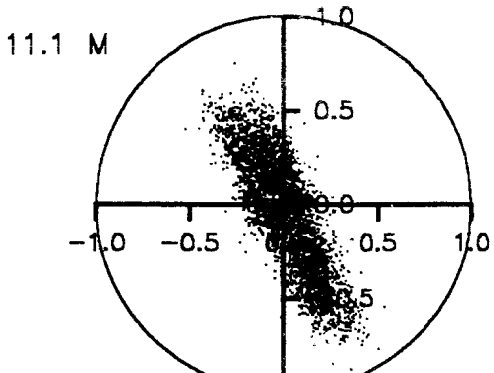
Start/End 1989/02/07 AT 14:10:00 1989/03/07 AT 07:20:00

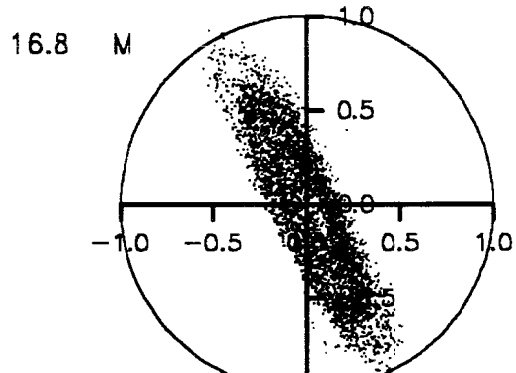
Position 54 19.96N 00 25.26E 11.1 Base Ht 5.7 Gap Ht

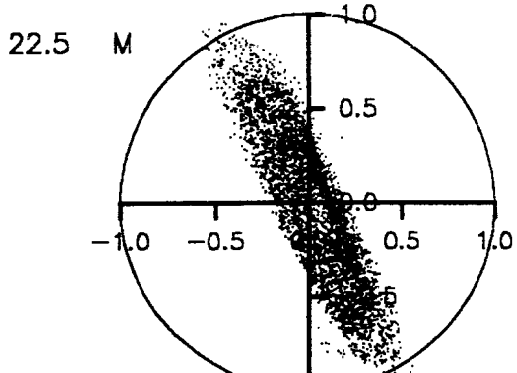


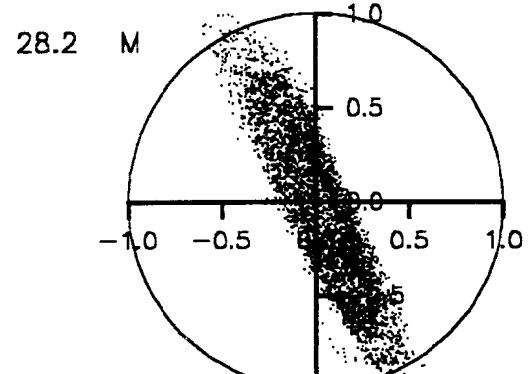










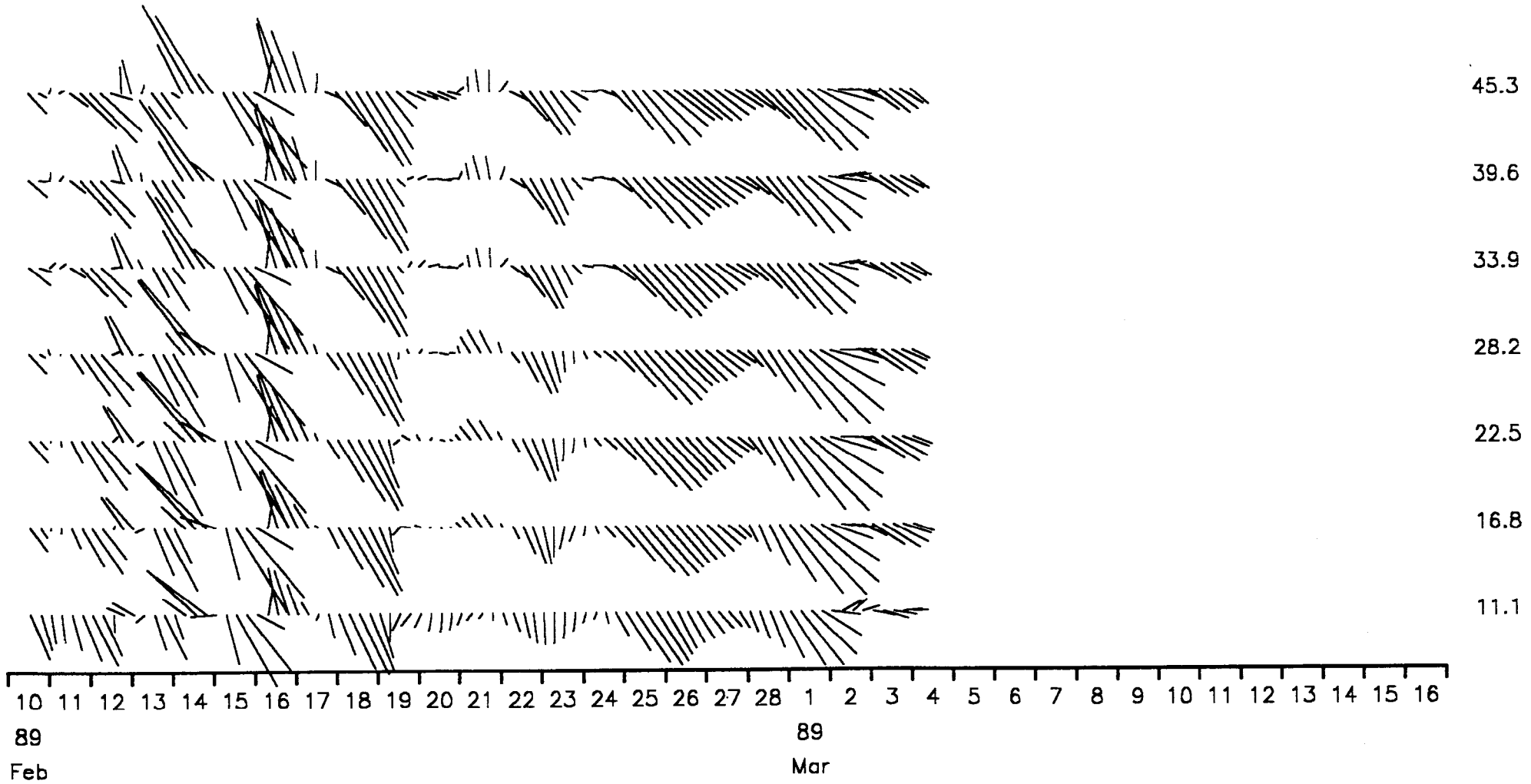


STICK TIME SERIES PLOT

Meter no. 0003 Rig no. C45CC Depth of water(m) 59.0

Start/End 1989/02/07 AT 14:10:00 1989/03/07 AT 07:20:00

Position 54 19.96N 00 25.26E 11.1 Base Ht 5.7 Gap Ht



STATISTICS FOR DP0003 C45CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.044	156.7	0.1025	-25.3	0.0072	64.7
2	16.8	0.040	144.8	0.1802	-25.4	0.0093	64.6
3	22.5	0.041	141.1	0.2031	-24.7	0.0090	65.3
4	28.2	0.041	137.9	0.2139	-24.2	0.0084	65.8
5	33.9	0.039	130.0	0.1674	-23.5	0.0067	66.5
6	39.6	0.038	129.0	0.1928	-23.4	0.0064	66.6
7	45.3	0.045	128.0	0.1979	-23.1	0.0062	66.9

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.037	155.6	0.0025	-32.9	0.0003	57.1
2	16.8	0.037	143.7	0.0043	-37.5	0.0003	52.5
3	22.5	0.038	138.4	0.0050	-35.8	0.0003	54.2
4	28.2	0.039	134.2	0.0053	-35.1	0.0003	54.9
5	33.9	0.037	126.9	0.0043	-32.0	0.0001	58.0
6	39.6	0.038	125.3	0.0047	-32.4	0.0002	57.6
7	45.3	0.045	123.5	0.0050	-32.4	0.0001	57.6

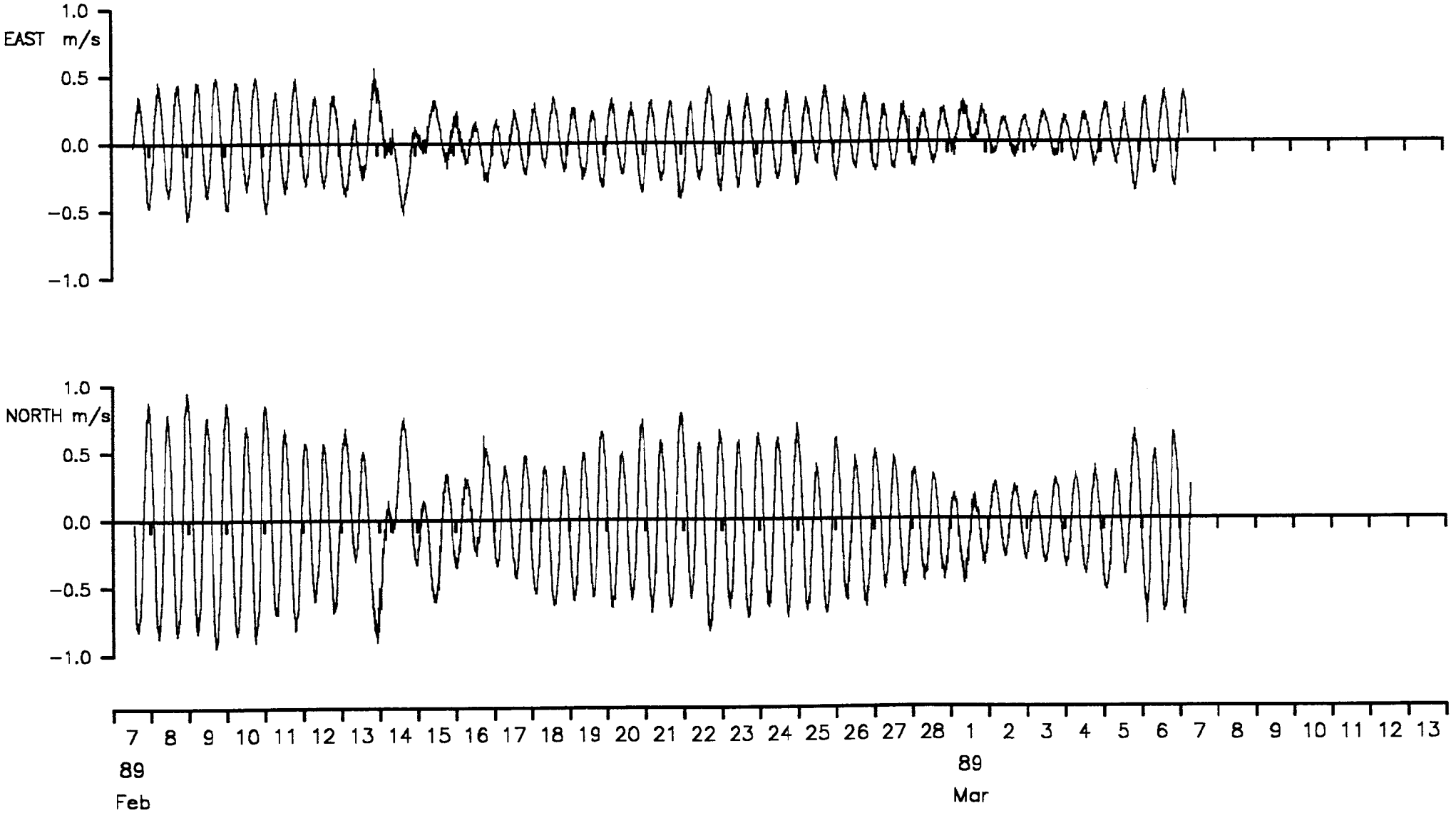
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C45CC Depth of water(m) 59.0

Start/End 1989/02/07 AT 14:10:00 1989/03/07 AT 07:20:00

Position 54 19.96N 00 25.26E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



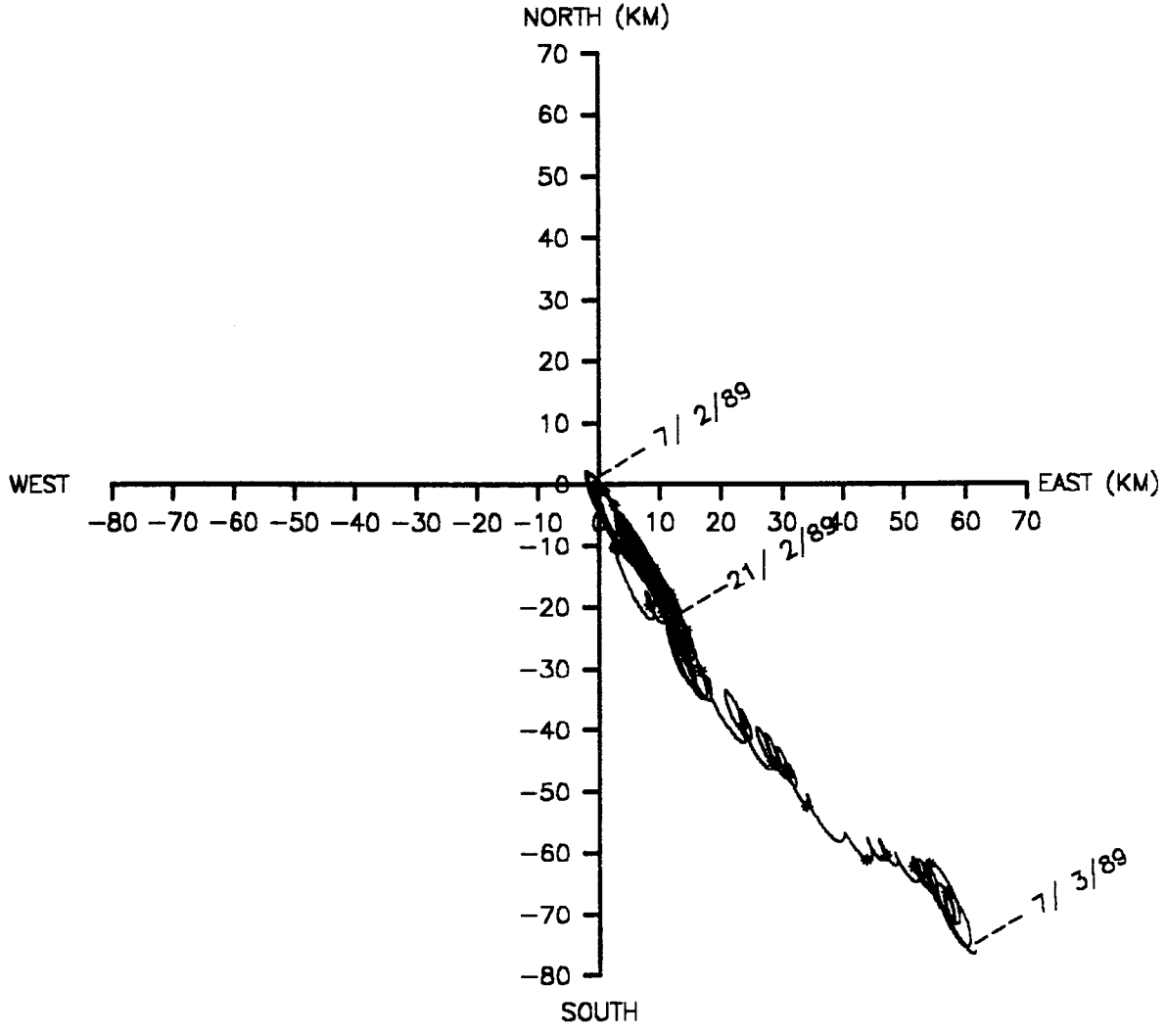
VECTOR PLOT

Meter no. 0003 Rig no. C45CC Depth of water(m) 59.0

Start/End 1989/02/07 AT 14:10:00 1989/03/07 AT 07:20:00

Position 54 19.96N 00 25.26E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0003 C45CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0257	0.42796507E-01	0.20687312E+00
Northings	-0.0318	0.16928190E+00	0.41143888E+00
Speed	0.4026	0.51614892E-01	0.22718912E+00

Vector mean speed 0.0409
Vector Mean Direction 141.1

Maximum ten values

Eastings					Northings				
0.560	0.550	0.490	0.484	0.483	0.949	0.947	0.921	0.915	0.910
0.483	0.482	0.482	0.480	0.479	0.893	0.888	0.882	0.879	0.872

Minimum ten values

Eastings					Northings				
-0.520	-0.531	-0.533	-0.535	-0.535	-0.877	-0.891	-0.894	-0.908	-0.908
-0.545	-0.546	-0.554	-0.557	-0.569	-0.913	-0.932	-0.932	-0.937	-0.949

Maximum speeds

1.073	1.065	1.061	1.055	1.052	1.047	1.037	1.037	1.029	1.027
1.021	1.020	1.020	1.012	1.005	1.002	0.993	0.991	0.989	0.982
0.980	0.976	0.974	0.973	0.968	0.967	0.960	0.957	0.956	0.956
0.949	0.947	0.947	0.946	0.946	0.944	0.944	0.944	0.943	0.943
0.942	0.941	0.941	0.940	0.939	0.938	0.936	0.936	0.936	0.935
0.935	0.933	0.931	0.931	0.929	0.929	0.928	0.928	0.927	0.926
0.922	0.921	0.921	0.920	0.919	0.918	0.917	0.913	0.910	0.910
0.910	0.908	0.906	0.906	0.906	0.905	0.905	0.905	0.904	0.902
0.901	0.900	0.899	0.897	0.896	0.896	0.895	0.893	0.893	0.893
0.892	0.892	0.891	0.891	0.890	0.889	0.889	0.889	0.889	0.889

Variance ellipse statistics

Maximum variance 0.2031E+00 Direction -24.7

Minimum variance 0.8975E-02 Direction 65.3

Total variance 0.2121E+00 Ratio of variances 0.4419E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 5.3

Average direction. maxdir +PI/2 to maxdir -PI/2 177.5

Statistics for DP0003 C45CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0256	0.19269728E-02	0.43897301E-01
Northings	-0.0288	0.34057037E-02	0.58358409E-01
Speed	0.0683	0.21096694E-02	0.45931138E-01

Vector mean speed 0.0385
Vector Mean Direction 138.4

Maximum ten values

Eastings					Northings				
0.123	0.119	0.107	0.102	0.096	0.121	0.119	0.118	0.113	0.091
0.091	0.080	0.079	0.079	0.071	0.062	0.060	0.059	0.053	0.034

Minimum ten values

Eastings					Northings				
-0.026	-0.034	-0.034	-0.034	-0.043	-0.103	-0.104	-0.104	-0.113	-0.121
-0.044	-0.049	-0.059	-0.100	-0.112	-0.124	-0.125	-0.127	-0.127	-0.149

Maximum speeds

0.175	0.174	0.165	0.161	0.161	0.158	0.156	0.143	0.140	0.127
0.127	0.125	0.123	0.122	0.120	0.118	0.114	0.109	0.102	0.101
0.100	0.100	0.088	0.088	0.087	0.085	0.084	0.083	0.082	0.082
0.082	0.078	0.078	0.077	0.074	0.074	0.073	0.072	0.072	0.070
0.068	0.068	0.067	0.064	0.060	0.059	0.059	0.056	0.054	0.053
0.052	0.051	0.049	0.048	0.048	0.047	0.042	0.041	0.041	0.040
0.040	0.038	0.037	0.036	0.036	0.035	0.034	0.029	0.027	0.023
0.023	0.017	0.015	0.015	0.014	0.014	0.013	0.012	0.012	0.011
0.011	0.010	0.008	0.007	0.004	0.002	0.001			

Variance ellipse statistics

Maximum variance 0.5008E-02 Direction -35.8

Minimum variance 0.3248E-03 Direction 54.2

Total variance 0.5333E-02 Ratio of variances 0.6486E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 10.7

Average direction. maxdir +PI/2 to maxdir -PI/2 178.2

Rig information details for C47CC

Position Latitude	:	54 19.81N
Position Longitude	:	00 23.85E
Water depth	:	59.0 m
Deployed on cruise	:	C47
Recovered on cruise	:	C49
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	09-MAR-89 15:15:00
Rig recovered on	:	08-APR-89 07:25:00
Period of deployment	:	29.7 days
Comments	:	Frame moves during deployment

Meter information details for 0003

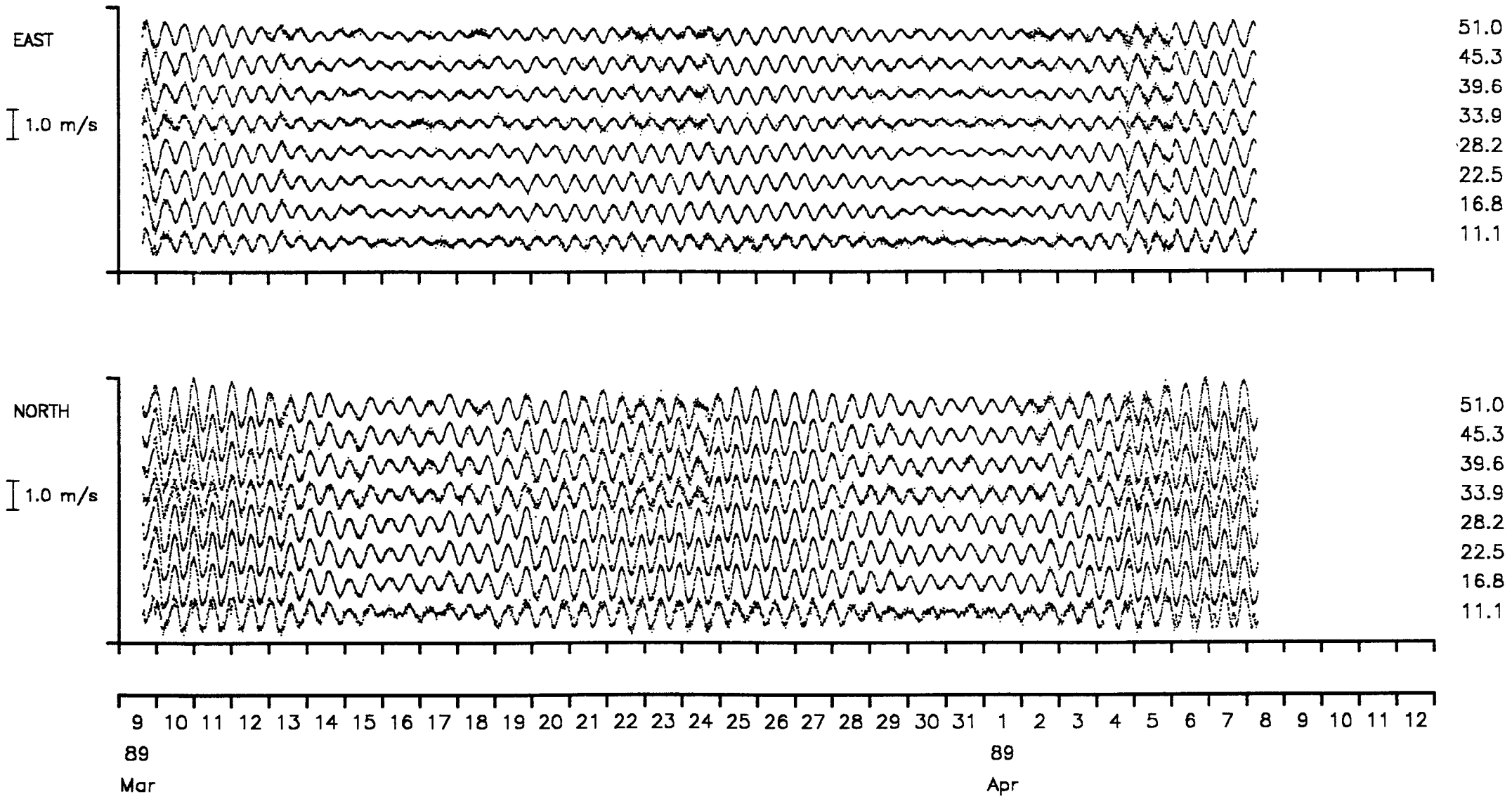
Rig No	:	C47CC
Meter No	:	0003
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	09-MAR-89 13:26:58
Meter stopped	:	08-APR-89 12:17:00
Period switched on	:	30.0 days
Period of good data	:	29.7 days
Total number of scans	:	4273
Timing error	:	2 seconds slow
Comments	:	Manually recorded start and stop times used due to timing channel corruption Compass does not react correctly to frame movements. Applied frame angle corrections are -8.0 degrees between scans 1 - 3882 18.3 degrees between scans 3883 - 4302

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C47CC Depth of water(m) 59.0

Start/End 1989/03/09 AT 15:15:00 1989/04/08 AT 07:25:00

Position 54 19.81N 00 23.85E 11.1 Base Ht 5.7 Gap Ht

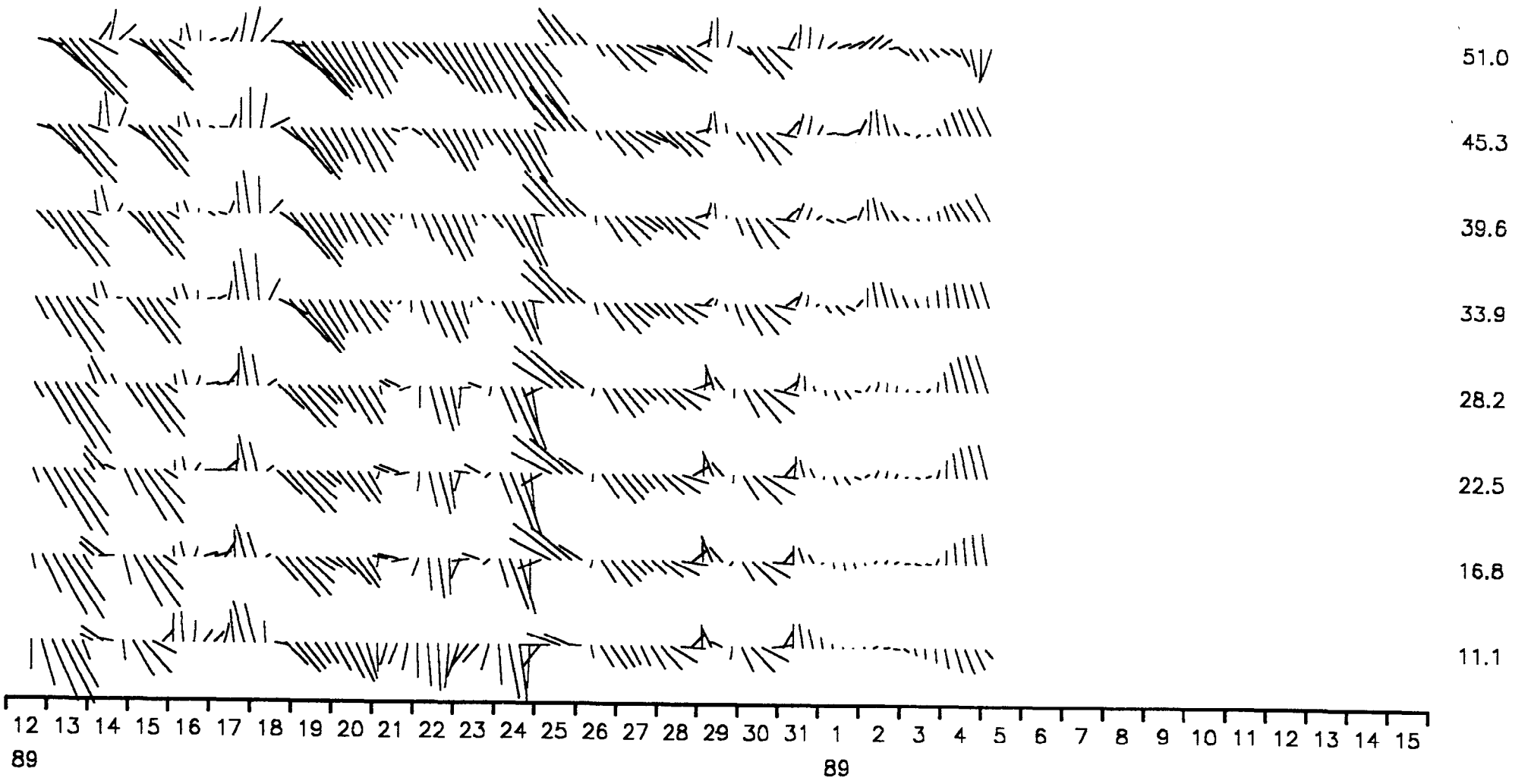


STICK TIME SERIES PLOT

Meter no. 0003 Rig no. C47CC Depth of water(m) 59.0

Start/End 1989/03/09 AT 15:15:00 1989/04/08 AT 07:25:00

Position 54 19.81N 00 23.85E 11.1 Base Ht 5.7 Gap Ht

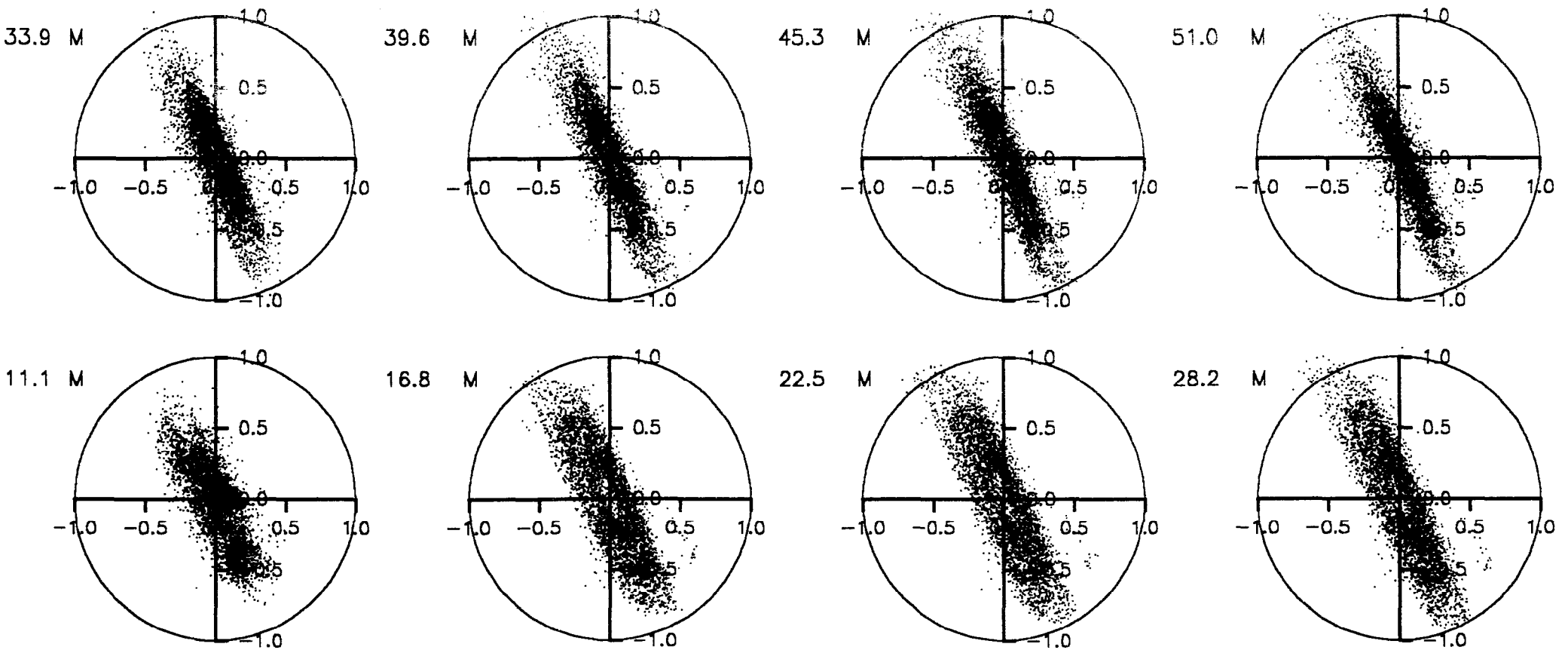


SCATTER PLOT

Meter no. 0003 Rig no. C47CC Depth of water(m) 59.0

Start/End 1989/03/09 AT 15:15:00 1989/04/08 AT 07:25:00

Position 54 19.81N 00 23.85E 11.1 Base Ht 5.7 Gap Ht



STATISTICS FOR DP0003 C47CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.016	162.9	0.0910	-25.7	0.0089	64.3
2	16.8	0.014	153.6	0.1701	-25.4	0.0109	64.6
3	22.5	0.015	144.6	0.1893	-24.7	0.0104	65.3
4	28.2	0.016	140.2	0.1992	-24.2	0.0094	65.8
5	33.9	0.020	138.9	0.1195	-23.5	0.0061	66.5
6	39.6	0.020	134.3	0.1515	-23.7	0.0058	66.3
7	45.3	0.022	120.9	0.1731	-23.7	0.0057	66.3
8	51.0	0.039	128.8	0.1521	-23.7	0.0053	66.3

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.021	158.6	0.0017	-19.0	0.0004	71.0
2	16.8	0.016	146.2	0.0021	-34.3	0.0003	55.7
3	22.5	0.017	138.9	0.0025	-33.8	0.0003	56.2
4	28.2	0.018	136.4	0.0027	-32.6	0.0002	57.4
5	33.9	0.020	130.1	0.0024	-30.8	0.0001	59.2
6	39.6	0.022	128.9	0.0025	-32.5	0.0001	57.5
7	45.3	0.024	122.3	0.0026	-31.7	0.0001	58.3
8	51.0	0.043	128.0	0.0031	-29.8	0.0002	60.2

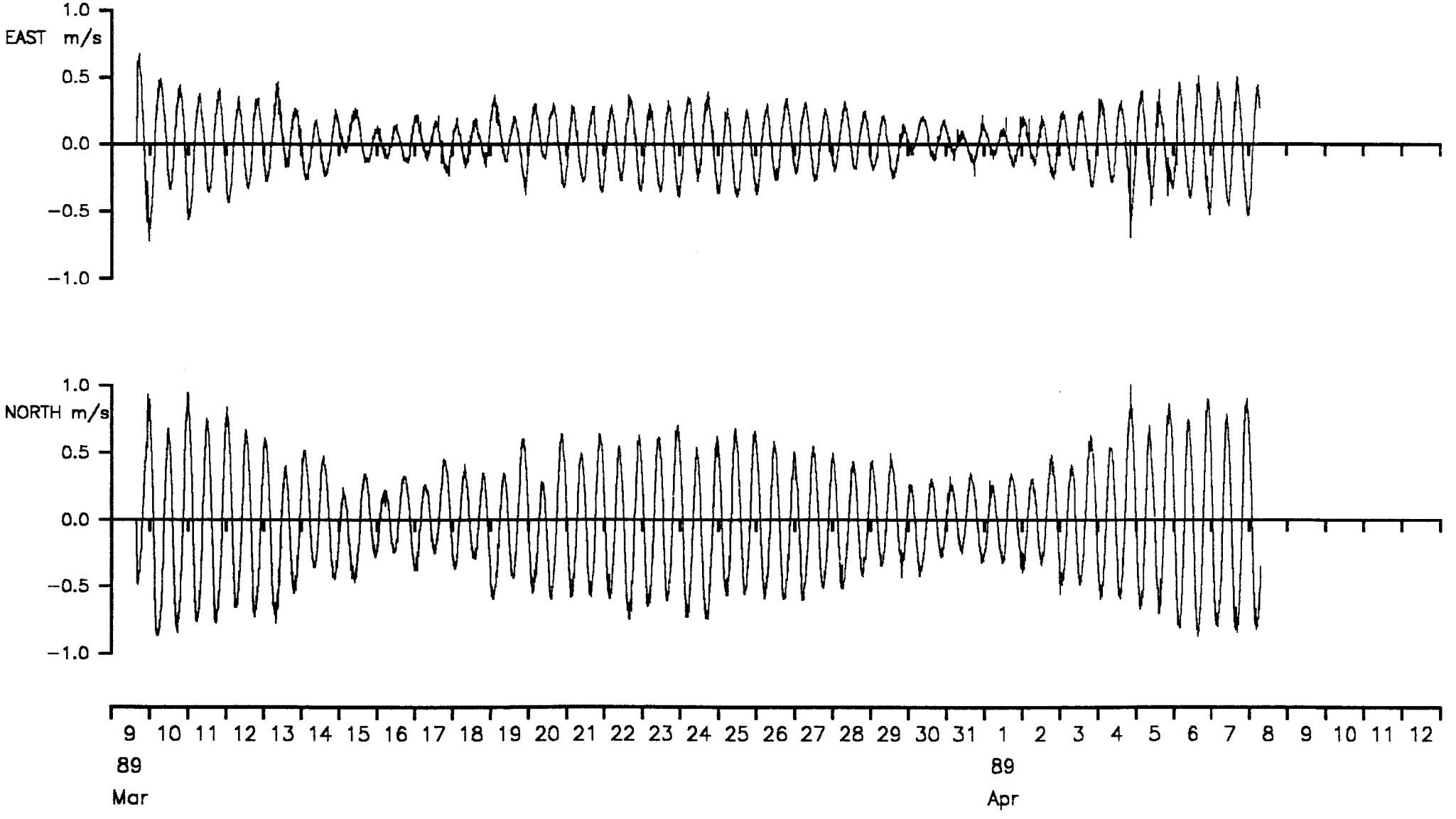
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C47CC Depth of water(m) 59.0

Start/End 1989/03/09 AT 15:15:00 1989/04/08 AT 07:25:00

Position 54 19.81N 00 23.85E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



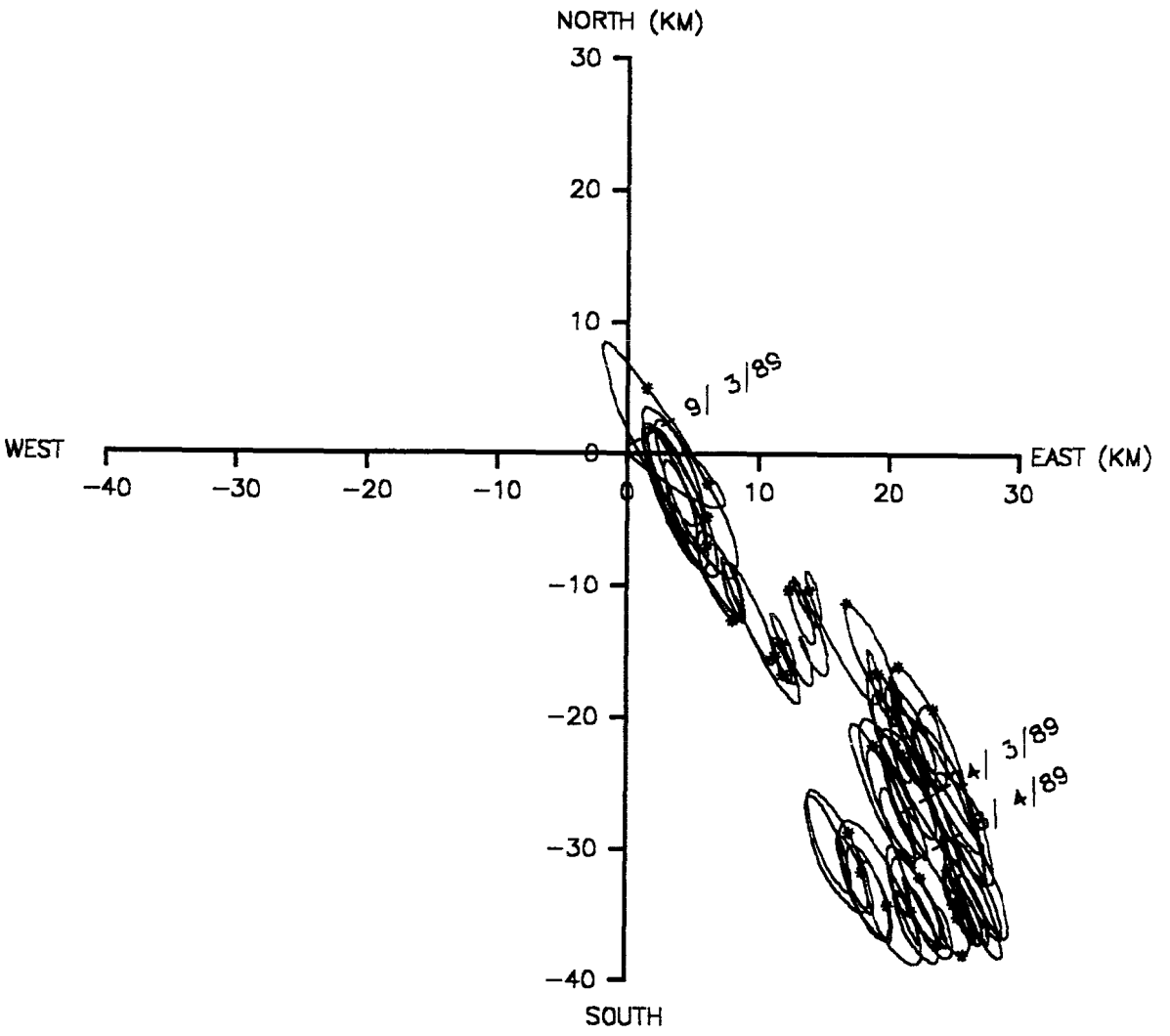
VECTOR PLOT

Meter no. 0003 Rig no. C47CC Depth of water(m) 59.0

Start/End 1989/03/09 AT 15:15:00 1989/04/08 AT 07:25:00

Position 54 19.81N 00 23.85E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0003 C47CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0087	0.41681152E-01	0.20415968E+00
Northings	-0.0122	0.15797973E+00	0.39746672E+00
Speed	0.3901	0.47722925E-01	0.21845579E+00

Vector mean speed 0.0150
Vector Mean Direction 144.6

Maximum ten values

Eastings					Northings				
0.668	0.649	0.614	0.611	0.608	1.000	0.941	0.941	0.930	0.925
0.606	0.606	0.597	0.593	0.580	0.908	0.898	0.893	0.891	0.891

Minimum ten values

Eastings					Northings				
-0.586	-0.587	-0.609	-0.610	-0.612	-0.840	-0.842	-0.844	-0.849	-0.853
-0.619	-0.631	-0.638	-0.693	-0.720	-0.855	-0.858	-0.863	-0.868	-0.869

Maximum speeds

1.108	1.084	1.075	1.071	1.070	1.065	1.060	1.050	1.043	1.043
1.041	1.021	1.021	1.015	1.007	1.000	1.000	1.000	1.000	0.996
0.985	0.985	0.983	0.980	0.978	0.976	0.973	0.972	0.966	0.964
0.964	0.959	0.959	0.958	0.956	0.954	0.953	0.949	0.949	0.947
0.947	0.942	0.942	0.940	0.939	0.939	0.938	0.938	0.935	0.932
0.932	0.931	0.931	0.930	0.927	0.927	0.927	0.926	0.926	0.926
0.924	0.924	0.924	0.924	0.923	0.920	0.917	0.916	0.916	0.913
0.913	0.912	0.911	0.902	0.902	0.900	0.899	0.899	0.893	0.892
0.891	0.891	0.890	0.886	0.885	0.885	0.884	0.884	0.883	0.883
0.883	0.882	0.882	0.880	0.879	0.878	0.878	0.878	0.878	0.877

Variance ellipse statistics

Maximum variance 0.1893E+00 Direction -24.7

Minimum variance 0.1038E-01 Direction 65.3

Total variance 0.1997E+00 Ratio of variances 0.5486E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 4.3

Average direction. maxdir +PI/2 to maxdir -PI/2 178.7

Statistics for DP0003 C47CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0111	0.96089486E-03	0.30998304E-01
Northings	-0.0127	0.17961166E-02	0.42380616E-01
Speed	0.0459	0.92044449E-03	0.30338828E-01

Vector mean speed 0.0169
Vector Mean Direction 138.9

Maximum ten values

Eastings					Northings				
0.078	0.068	0.068	0.068	0.066	0.066	0.061	0.060	0.058	0.058
0.059	0.057	0.054	0.052	0.051	0.053	0.049	0.047	0.044	0.043

Minimum ten values

Eastings					Northings				
-0.026	-0.026	-0.027	-0.034	-0.035	-0.071	-0.071	-0.076	-0.081	-0.088
-0.036	-0.040	-0.071	-0.073	-0.085	-0.092	-0.095	-0.106	-0.108	-0.115

Maximum speeds

0.139	0.127	0.114	0.112	0.108	0.104	0.103	0.101	0.098	0.097
0.095	0.079	0.079	0.079	0.076	0.074	0.071	0.069	0.066	0.065
0.063	0.063	0.063	0.062	0.060	0.060	0.060	0.058	0.057	0.057
0.057	0.055	0.053	0.050	0.050	0.050	0.049	0.049	0.049	0.047
0.047	0.047	0.045	0.044	0.044	0.042	0.041	0.040	0.040	0.038
0.036	0.036	0.035	0.034	0.032	0.032	0.031	0.031	0.031	0.031
0.031	0.030	0.030	0.030	0.030	0.030	0.029	0.028	0.027	0.026
0.026	0.025	0.024	0.024	0.020	0.017	0.016	0.015	0.015	0.014
0.014	0.014	0.012	0.011	0.011	0.011	0.011	0.011	0.011	0.009
0.008	0.007	0.007	0.005	0.004					

Variance ellipse statistics

Maximum variance 0.2470E-02 Direction -33.8

Minimum variance 0.2872E-03 Direction 56.2

Total variance 0.2757E-02 Ratio of variances 0.1163E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 16.4

Average direction. maxdir +PI/2 to maxdir -PI/2 174.4

Rig information details for C49CC

Position Latitude	:	54 19.80N
Position Longitude	:	00 23.96E
Water depth	:	60.0 m
Deployed on cruise	:	C49
Recovered on cruise	:	C51
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	08-APR-89 09:30:00
Rig recovered on	:	06-MAY-89 13:55:00
Period of deployment	:	28.2 days
Comments	:	Launch and recovery successful

Meter information details for 0004

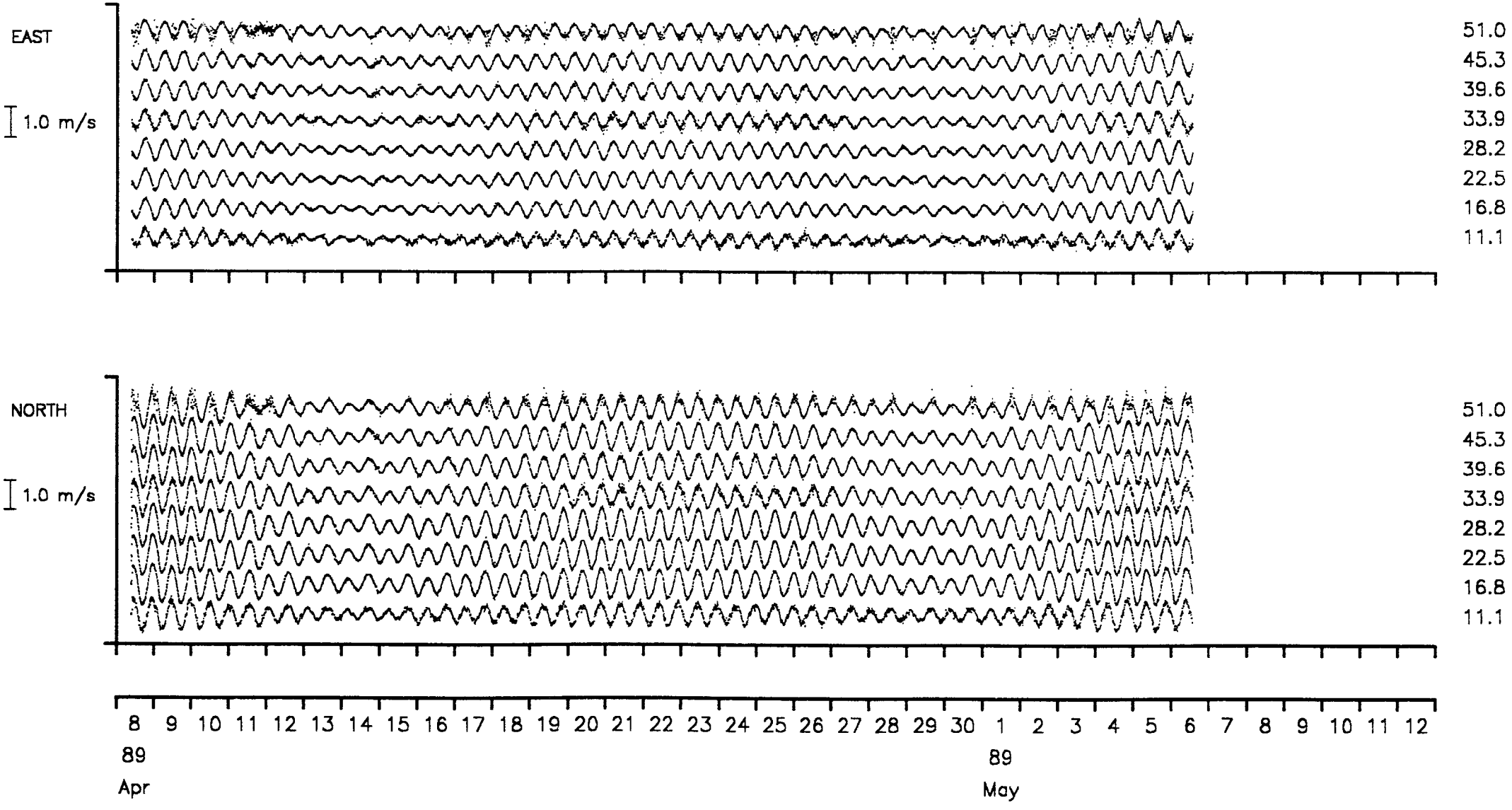
Rig No	:	C49CC
Meter No	:	0004
Frame angle correction	:	-29.7 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	08-APR-89 05:46:51
Meter stopped	:	06-MAY-89 14:07:03
Period switched on	:	28.3 days
Period of good data	:	28.2 days
Total number of scans	:	4058
Timing error	:	12 seconds slow
Comments	:	Corrupted hexadecimal present in raw data e.g F7's instead of FF's

VELOCITY COMPONENT TIME SERIES PLOT

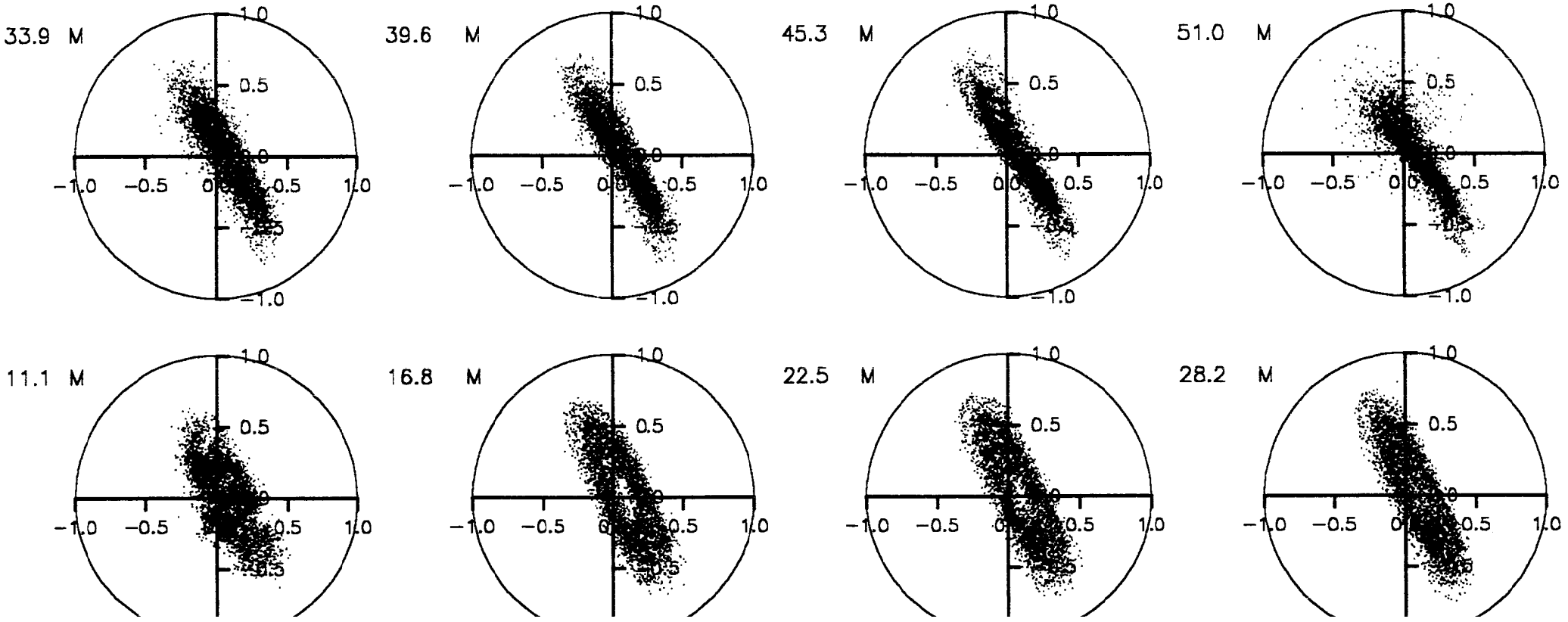
Meter no. 0004 Rig no. C49CC Depth of water(m) 60.0

Start/End 1989/04/08 AT 09:30:00 1989/05/06 AT 13:55:00

Position 54 19.80N 00 23.96E 11.1 Base Ht 5.7 Gap Ht



SCATTER PLOT
Meter no. 0004 Rig no. C49CC Depth of water(m) 60.0
Start/End 1989/04/08 AT 09:30:00 1989/05/06 AT 13:55:00
Position 54 19.80N 00 23.96E 11.1 Base Ht 5.7 Gap Ht

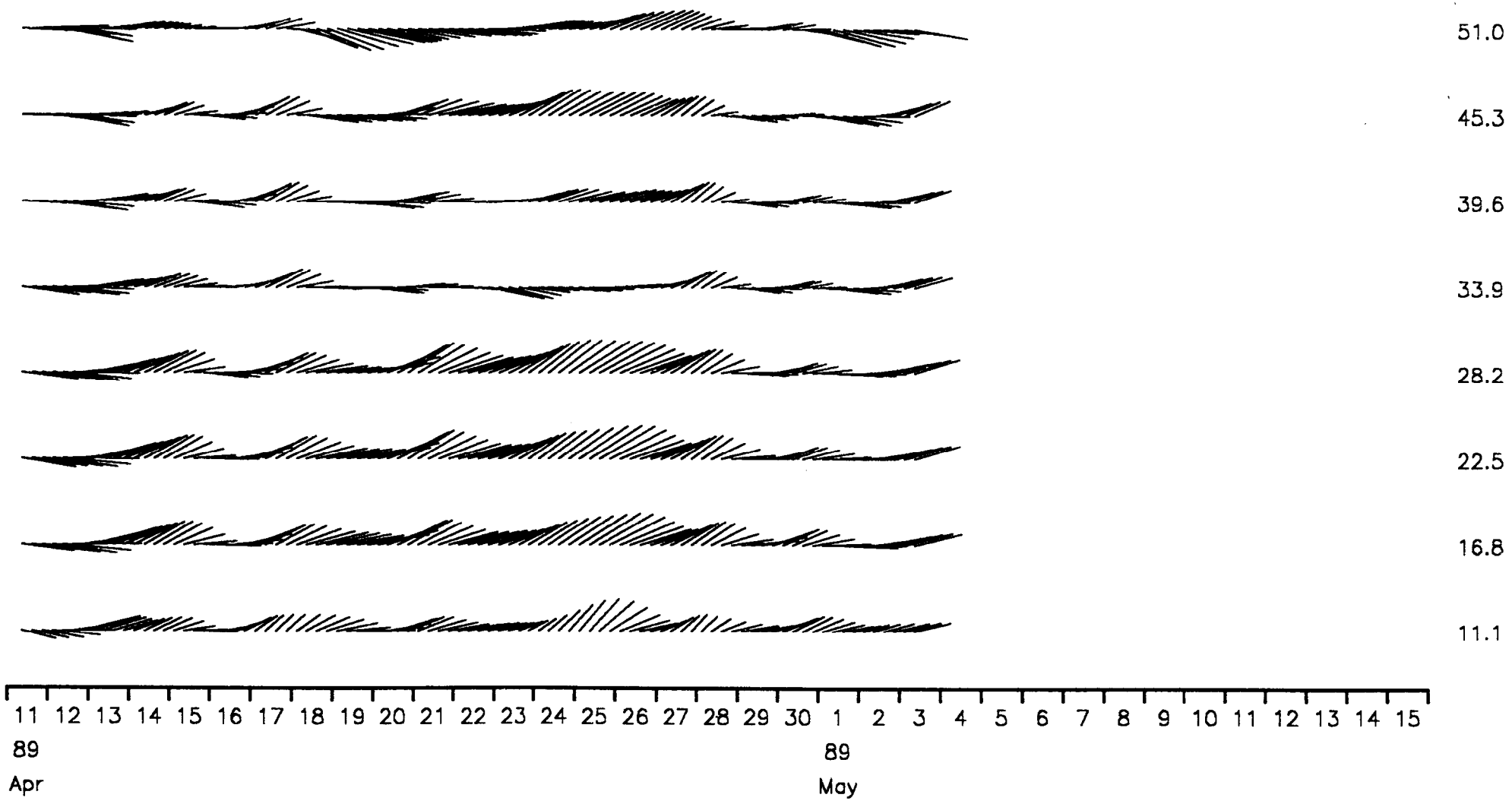


STICK TIME SERIES PLOT

Meter no. 0004 Rig no. C49CC Depth of water(m) 60.0

Start/End 1989/04/08 AT 09:30:00 1989/05/06 AT 13:55:00

Position 54 19.80N 00 23.96E 11.1 Base Ht 5.7 Gap Ht



STATISTICS FOR DP0004 C49CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.063	75.7	0.0676	-26.9	0.0105	63.1
2	16.8	0.084	74.6	0.1133	-24.8	0.0107	65.2
3	22.5	0.085	73.9	0.1219	-24.7	0.0094	65.3
4	28.2	0.085	74.2	0.1247	-24.7	0.0076	65.3
5	33.9	0.070	87.2	0.0931	-29.7	0.0051	60.3
6	39.6	0.072	82.3	0.1053	-30.3	0.0041	59.7
7	45.3	0.075	79.0	0.1098	-31.4	0.0035	58.6
8	51.0	0.092	95.9	0.0844	-33.6	0.0058	56.4

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.060	73.3	0.0003	-58.2	0.0001	31.8
2	16.8	0.085	74.3	0.0003	-32.6	0.0001	57.4
3	22.5	0.086	73.7	0.0004	-28.2	0.0001	61.8
4	28.2	0.087	74.7	0.0004	-21.0	0.0002	69.0
5	33.9	0.072	87.2	0.0003	-52.8	0.0001	37.2
6	39.6	0.073	83.4	0.0003	-56.6	0.0001	33.4
7	45.3	0.075	80.7	0.0004	-45.8	0.0002	44.2
8	51.0	0.084	89.8	0.0006	-56.8	0.0002	33.2

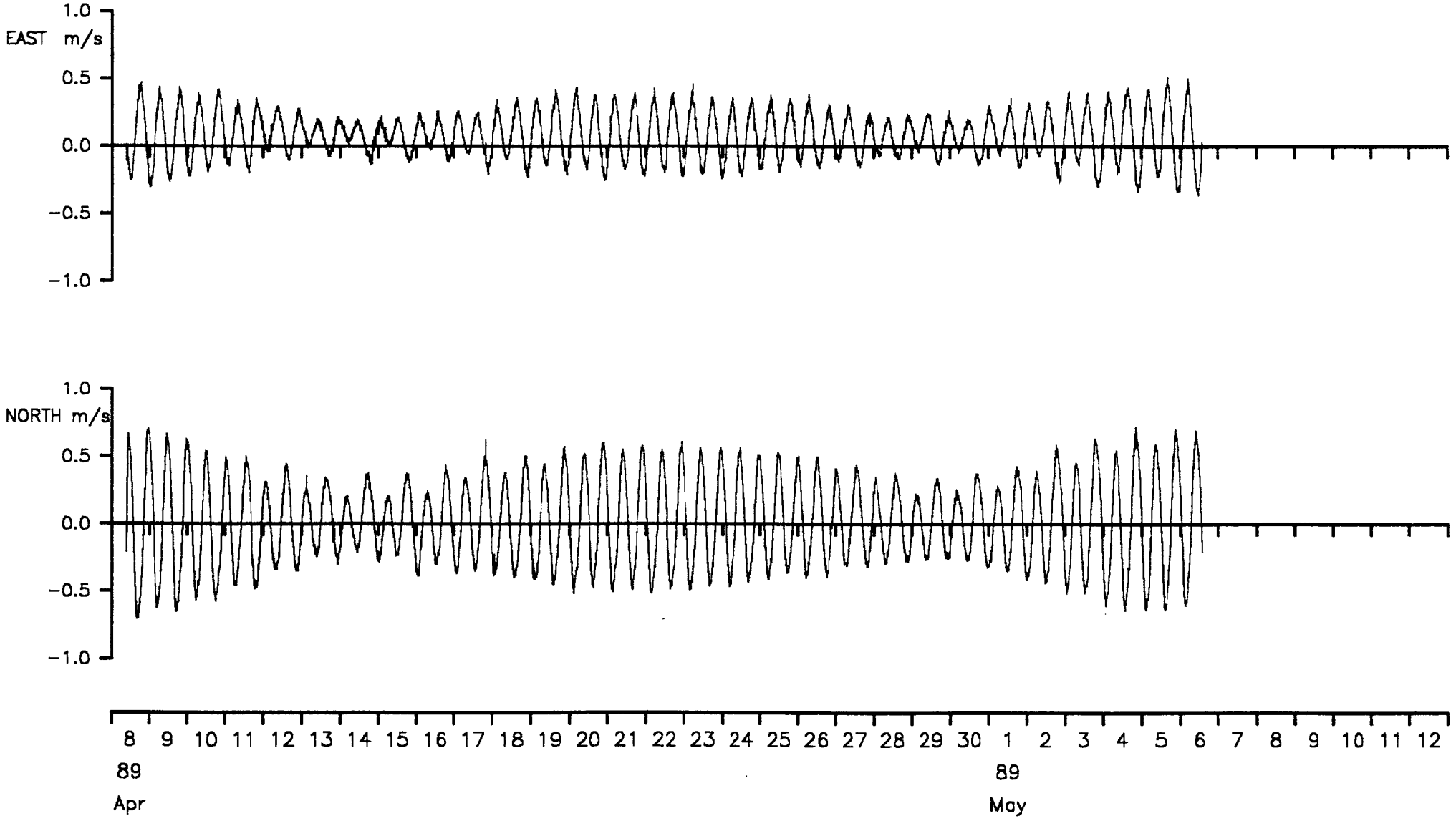
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0004 Rig no. C49CC Depth of water(m) 60.0

Start/End 1989/04/08 AT 09:30:00 1989/05/06 AT 13:55:00

Position 54 19.80N 00 23.96E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



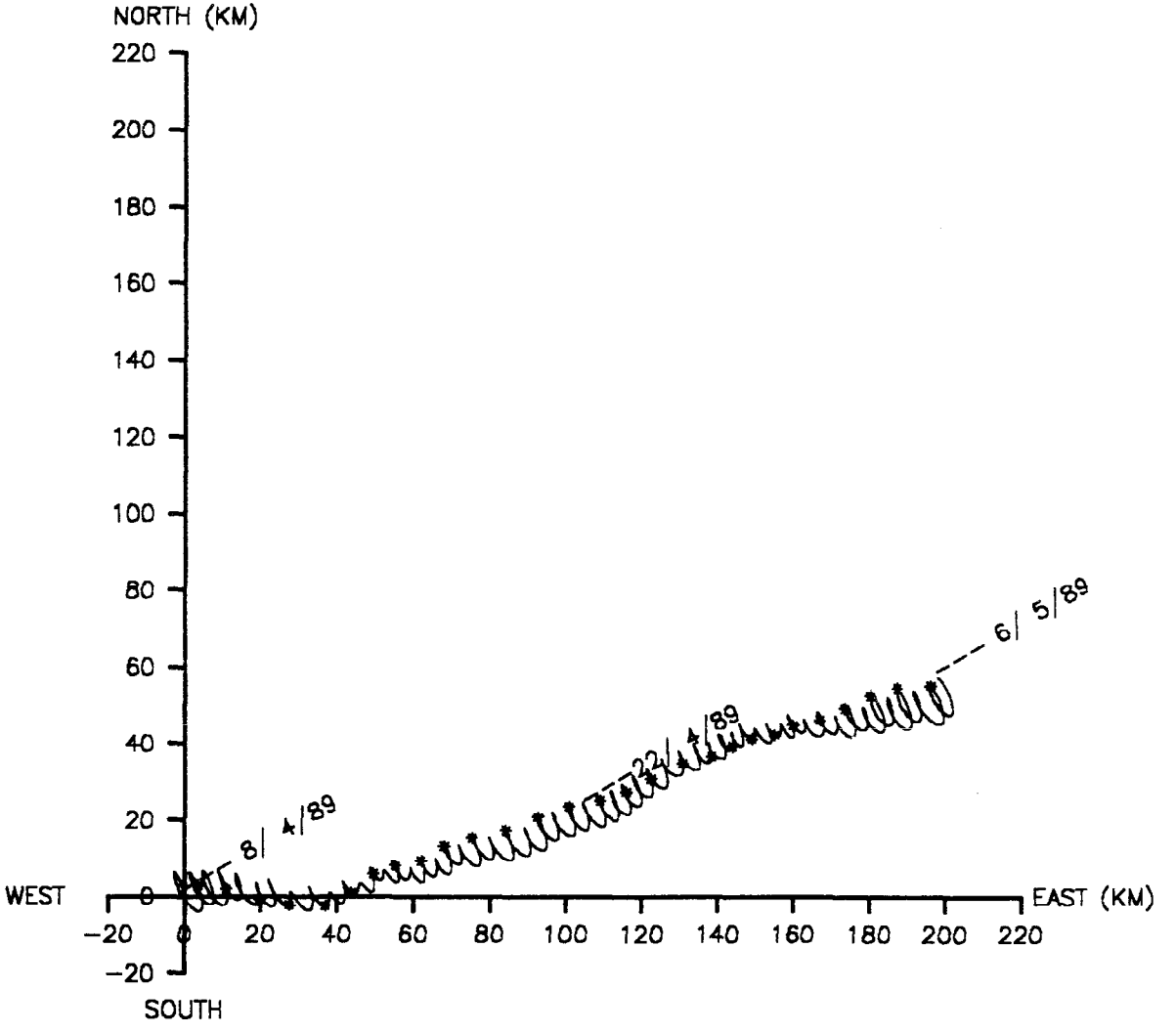
VECTOR PLOT

Meter no. 0004 Rig no. C49CC Depth of water(m) 60.0

Start/End 1989/04/08 AT 09:30:00 1989/05/06 AT 13:55:00

Position 54 19.80N 00 23.96E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0004 C49CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0814	0.29040746E-01	0.17041349E+00
Northings	0.0234	0.10226399E+00	0.31978744E+00
Speed	0.3361	0.25503926E-01	0.15969944E+00

Vector mean speed 0.0847
Vector Mean Direction 73.9

Maximum ten values

Eastings					Northings				
0.509	0.508	0.497	0.488	0.476	0.722	0.703	0.701	0.701	0.697
0.467	0.462	0.458	0.458	0.455	0.691	0.690	0.689	0.688	0.682

Minimum ten values

Eastings					Northings				
-0.320	-0.321	-0.324	-0.329	-0.331	-0.656	-0.658	-0.664	-0.674	-0.675
-0.335	-0.336	-0.337	-0.341	-0.365	-0.678	-0.685	-0.694	-0.701	-0.705

Maximum speeds

0.793	0.789	0.774	0.769	0.765	0.761	0.759	0.752	0.751	0.748
0.747	0.745	0.743	0.742	0.740	0.738	0.735	0.735	0.734	0.733
0.731	0.728	0.727	0.725	0.725	0.722	0.718	0.717	0.717	0.714
0.713	0.713	0.712	0.712	0.711	0.710	0.709	0.709	0.707	0.707
0.707	0.706	0.705	0.705	0.703	0.703	0.702	0.698	0.697	0.696
0.695	0.694	0.692	0.691	0.691	0.691	0.691	0.691	0.689	0.688
0.688	0.688	0.686	0.684	0.683	0.683	0.683	0.682	0.682	0.682
0.682	0.682	0.681	0.681	0.680	0.680	0.679	0.678	0.678	0.677
0.676	0.676	0.674	0.674	0.674	0.673	0.673	0.673	0.672	0.671
0.671	0.671	0.670	0.670	0.669	0.669	0.668	0.668	0.668	0.667

Variance ellipse statistics

Maximum variance 0.1219E+00 Direction -24.7

Minimum variance 0.9446E-02 Direction 65.3

Total variance 0.1313E+00 Ratio of variances 0.7751E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 18.9

Average direction. maxdir +PI/2 to maxdir -PI/2 163.8

Statistics for DP0004 C49CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0830	0.19414900E-03	0.13933733E-01
Northings	0.0242	0.31567947E-03	0.17767370E-01
Speed	0.0884	0.16632643E-03	0.12896754E-01

Vector mean speed 0.0864
Vector Mean Direction 73.7

Maximum ten values

Eastings					Northings				
0.118	0.115	0.114	0.110	0.107	0.059	0.057	0.057	0.054	0.051
0.107	0.106	0.105	0.102	0.098	0.051	0.050	0.048	0.047	0.047

Minimum ten values

Eastings					Northings				
0.065	0.065	0.065	0.063	0.063	0.000	0.000	-0.001	-0.001	-0.001
0.061	0.061	0.059	0.055	0.055	-0.011	-0.013	-0.014	-0.015	-0.015

Maximum speeds

0.119	0.115	0.115	0.112	0.111	0.110	0.110	0.109	0.108	0.107
0.106	0.105	0.105	0.103	0.102	0.100	0.099	0.099	0.098	0.098
0.097	0.096	0.095	0.095	0.095	0.095	0.095	0.094	0.094	0.094
0.094	0.093	0.093	0.093	0.092	0.092	0.092	0.092	0.091	0.090
0.090	0.089	0.089	0.087	0.087	0.087	0.086	0.085	0.085	0.085
0.085	0.084	0.084	0.083	0.083	0.082	0.082	0.082	0.082	0.082
0.082	0.081	0.081	0.081	0.081	0.081	0.080	0.079	0.079	0.078
0.078	0.077	0.077	0.077	0.076	0.075	0.074	0.073	0.073	0.072
0.072	0.071	0.069	0.069	0.067	0.067	0.066	0.065	0.065	

Variance ellipse statistics

Maximum variance 0.3649E-03 Direction -28.2

Minimum variance 0.1448E-03 Direction 61.8

Total variance 0.5098E-03 Ratio of variances 0.3969E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 85.3

Average direction. maxdir +PI/2 to maxdir -PI/2 105.4

Meter information details for 9632

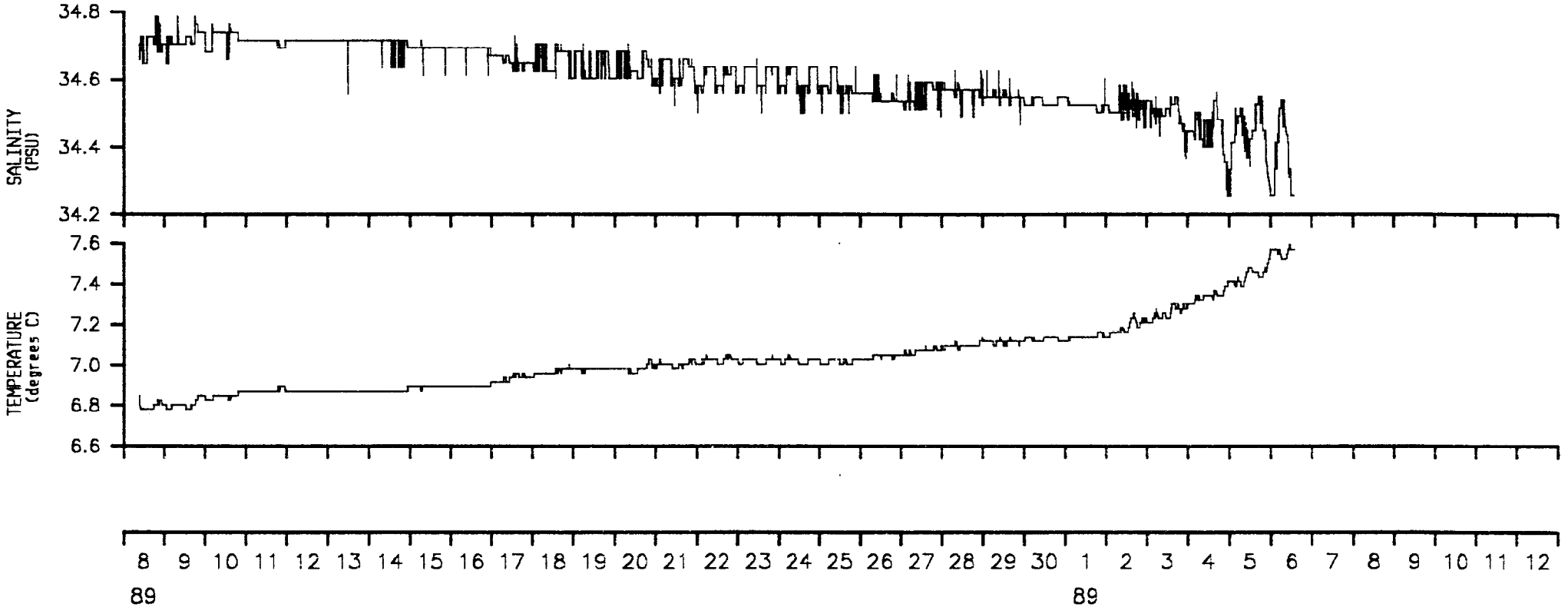
Rig No	:	C49CC
Meter No	:	9632
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AS
Meter started	:	06-APR-89 08:10:00
Meter stopped	:	06-MAY-89 14:50:00
Period switched on	:	30.3 days
Period of good data	:	28.2 days
Total number of scans	:	4058
Timing error	:	None
Comments	:	Good record obtained
		No PRESSURE sensor fitted to meter

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 9632 Rig no. C49CC Depth of water(m) 60.0

Start/End 1989/04/08 AT 09:30:00 1989/05/06 AT 13:55:00

Position 54 19.80N 00 23.96E Meter Height(m) 0.8



Rig information details for C51CC

Position Latitude	:	54 19.86N
Position Longitude	:	00 24.21E
Water depth	:	60.0 m
Deployed on cruise	:	C51
Recovered on cruise	:	C53
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	06-MAY-89 16:50:00
Rig recovered on	:	04-JUNE-89 04:40:00
Period of deployment	:	28.5 days
Comments	:	Launch and recovery successful

Meter information details for 0003

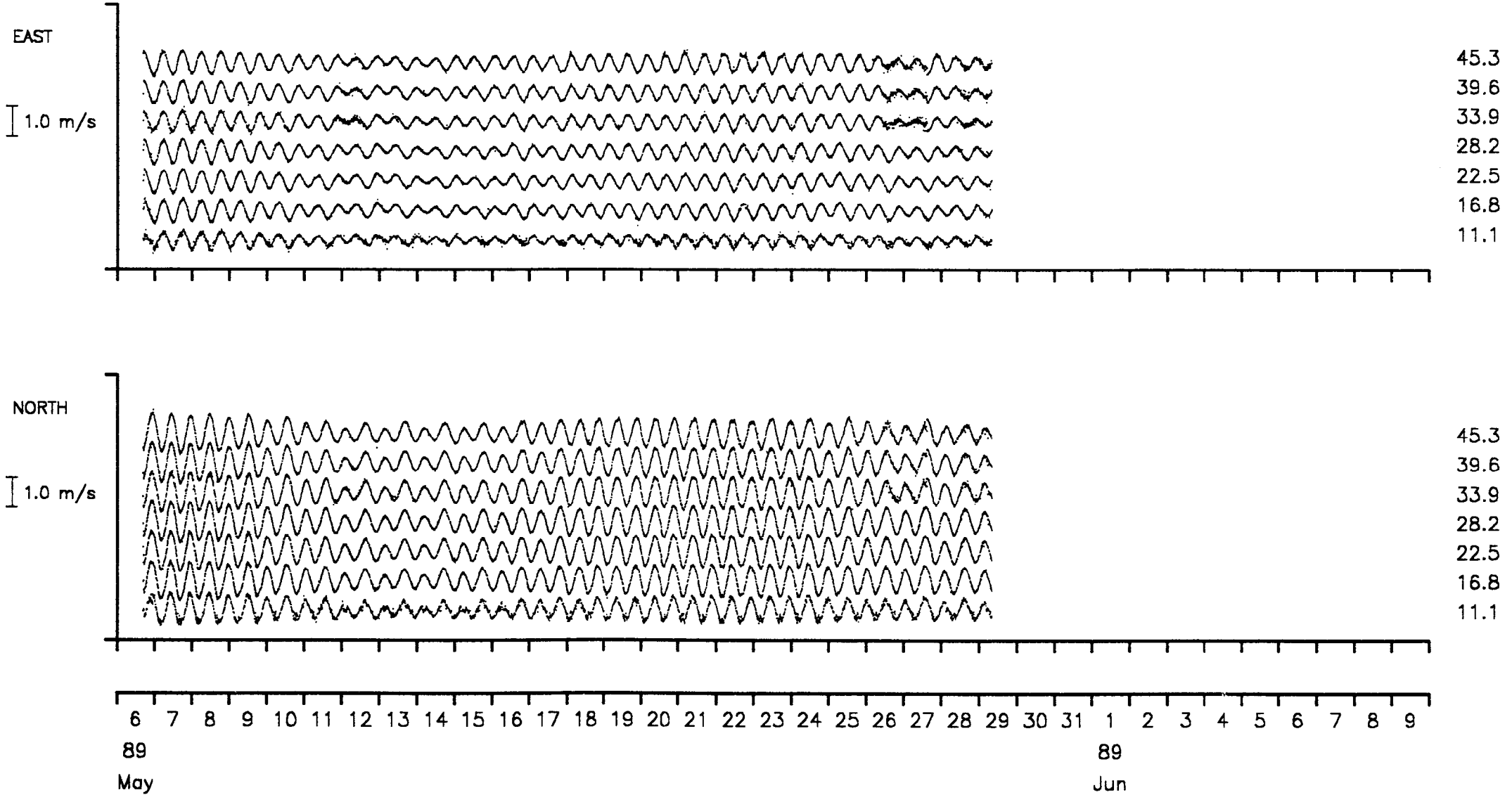
Rig No	:	C51CC
Meter No	:	0003
Frame angle correction	:	-4.2 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	06-MAY-89 12:27:00
Time of last valid scan	:	29-MAY-89 08:17:01
Period of good data	:	22.6 days short record
Total number of scans	:	3261
Timing error	:	1 second slow
Comments	:	Damage to meter noted on recovery

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C51CC Depth of water(m) 60.0

Start/End 1989/05/06 AT 16:50:00 1989/06/04 AT 04:40:00

Position 54 19.86N 00 24.21E 11.1 Base Ht 5.7 Gap Ht

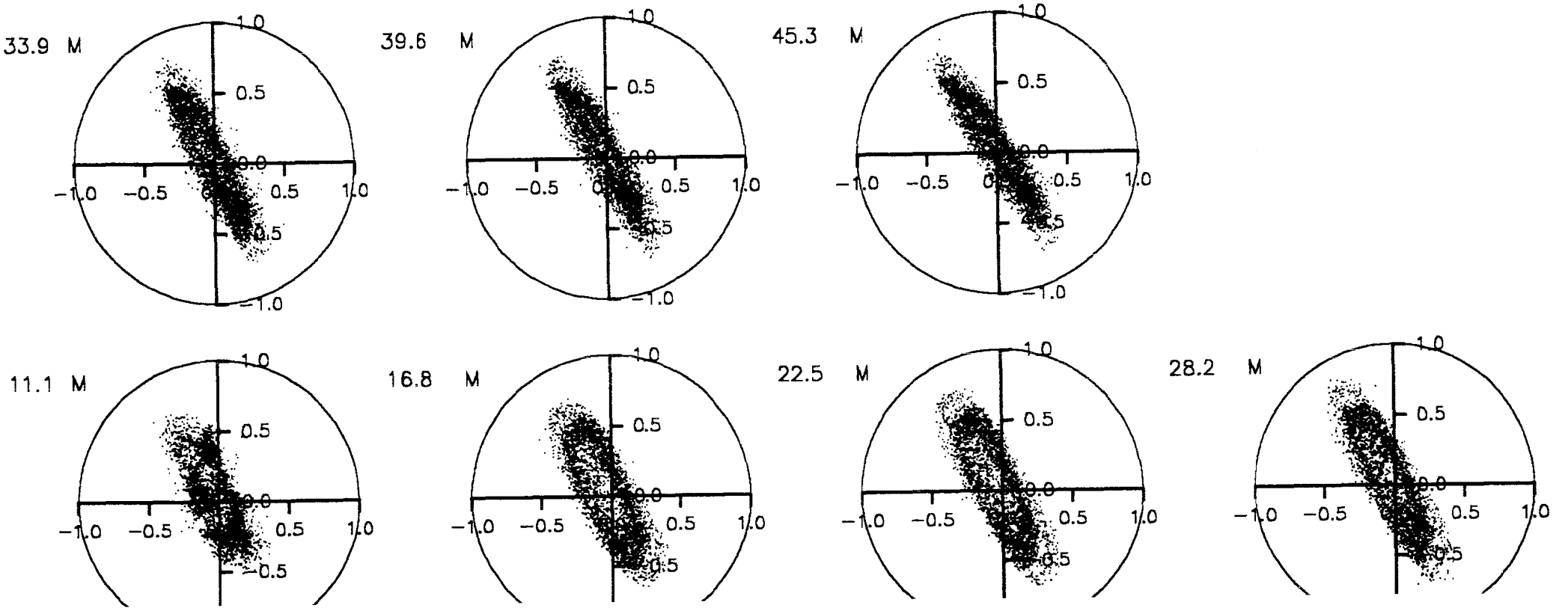


SCATTER PLOT

Meter no. 0003 Rig no. C51CC Depth of water(m) 60.0

Start/End 1989/05/06 AT 16:50:00 1989/06/04 AT 04:40:00

Position 54 19.86N 00 24.21E 11.1 Base Ht 5.7 Gap Ht



STICK TIME SERIES PLOT

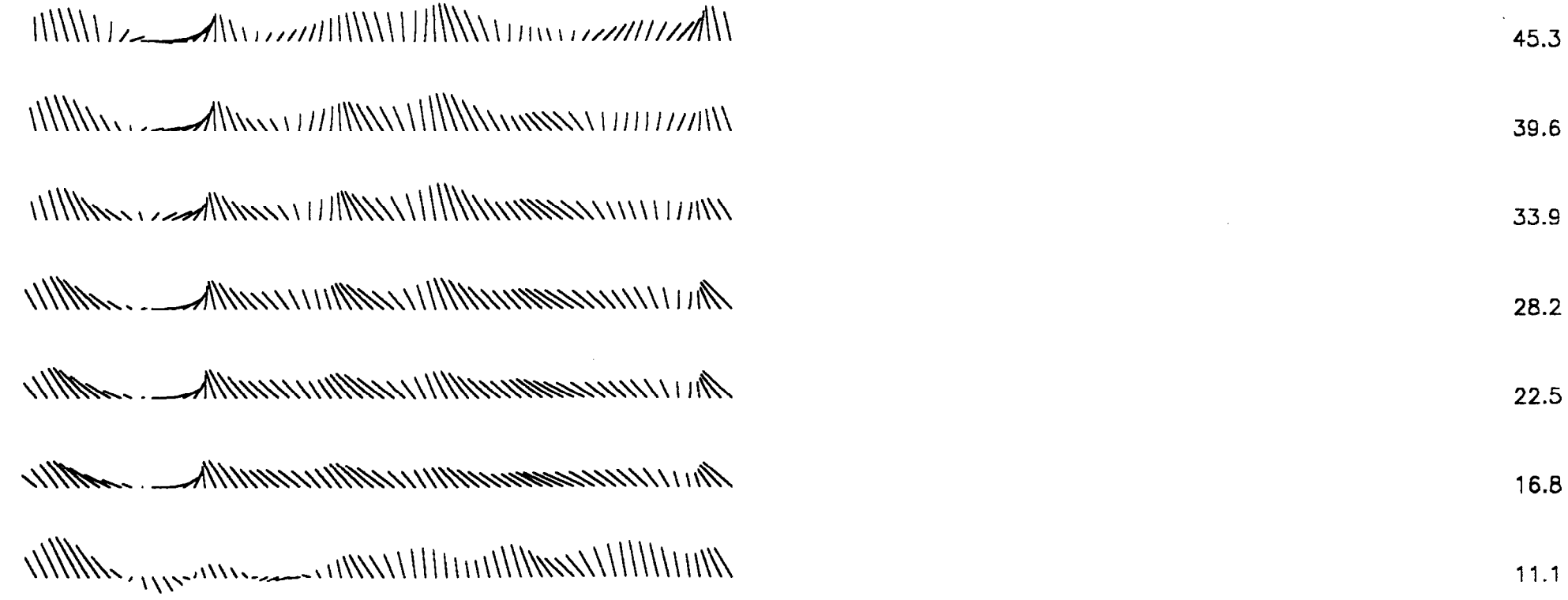
Meter no. 0003 Rig no. C51CC Depth of water(m) 60.0

Start/End 1989/05/06 AT 16:50:00 1989/06/04 AT 04:40:00

Position 54 19.86N 00 24.21E 11.1 Base Ht 5.7 Gap Ht

——— Bin Ht (m)

Scale 0.1 m/s



9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12

89 89

May Jun

STATISTICS FOR DP0003 C51CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.036	-25.1	0.0759	-22.8	0.0090	67.2
2	16.8	0.041	-46.5	0.1246	-24.5	0.0113	65.5
3	22.5	0.042	-40.6	0.1339	-24.7	0.0100	65.3
4	28.2	0.042	-33.7	0.1376	-25.6	0.0081	64.4
5	33.9	0.037	-22.4	0.1270	-26.0	0.0056	64.0
6	39.6	0.035	-14.7	0.1284	-28.5	0.0047	61.5
7	45.3	0.033	3.2	0.1263	-32.1	0.0041	57.9

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.032	-25.3	0.0006	-20.5	0.0001	69.5
2	16.8	0.038	-46.2	0.0004	-70.2	0.0001	19.8
3	22.5	0.039	-39.7	0.0004	-68.5	0.0001	21.5
4	28.2	0.039	-32.1	0.0004	-65.2	0.0001	24.8
5	33.9	0.037	-23.8	0.0003	-66.2	0.0001	23.8
6	39.6	0.035	-13.6	0.0003	-51.8	0.0001	38.2
7	45.3	0.034	6.3	0.0005	-43.1	0.0001	46.9

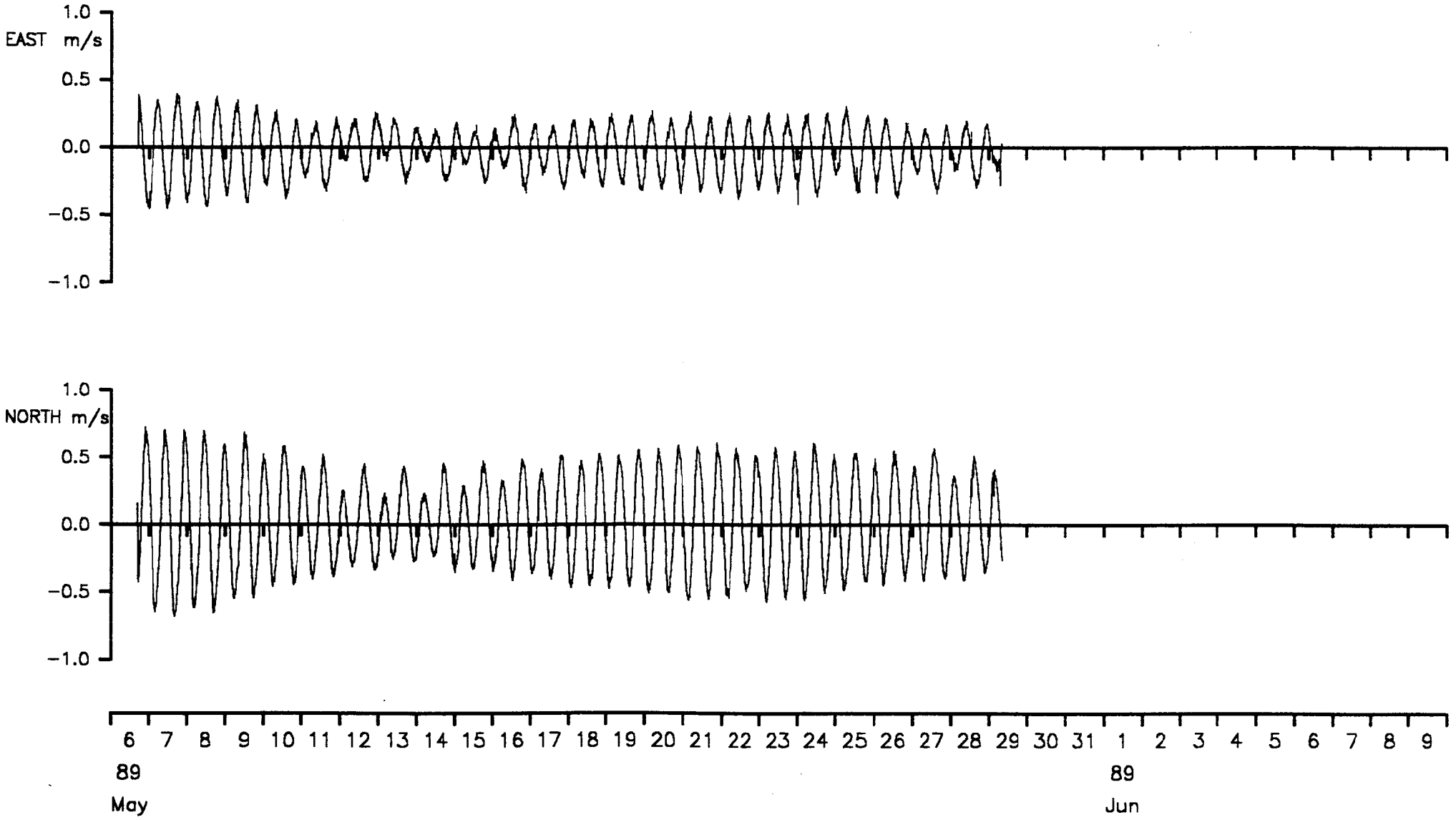
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0003 Rig no. C51CC Depth of water(m) 60.0

Start/End 1989/05/06 AT 16:50:00 1989/06/04 AT 04:40:00

Position 54 19.86N 00 24.21E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



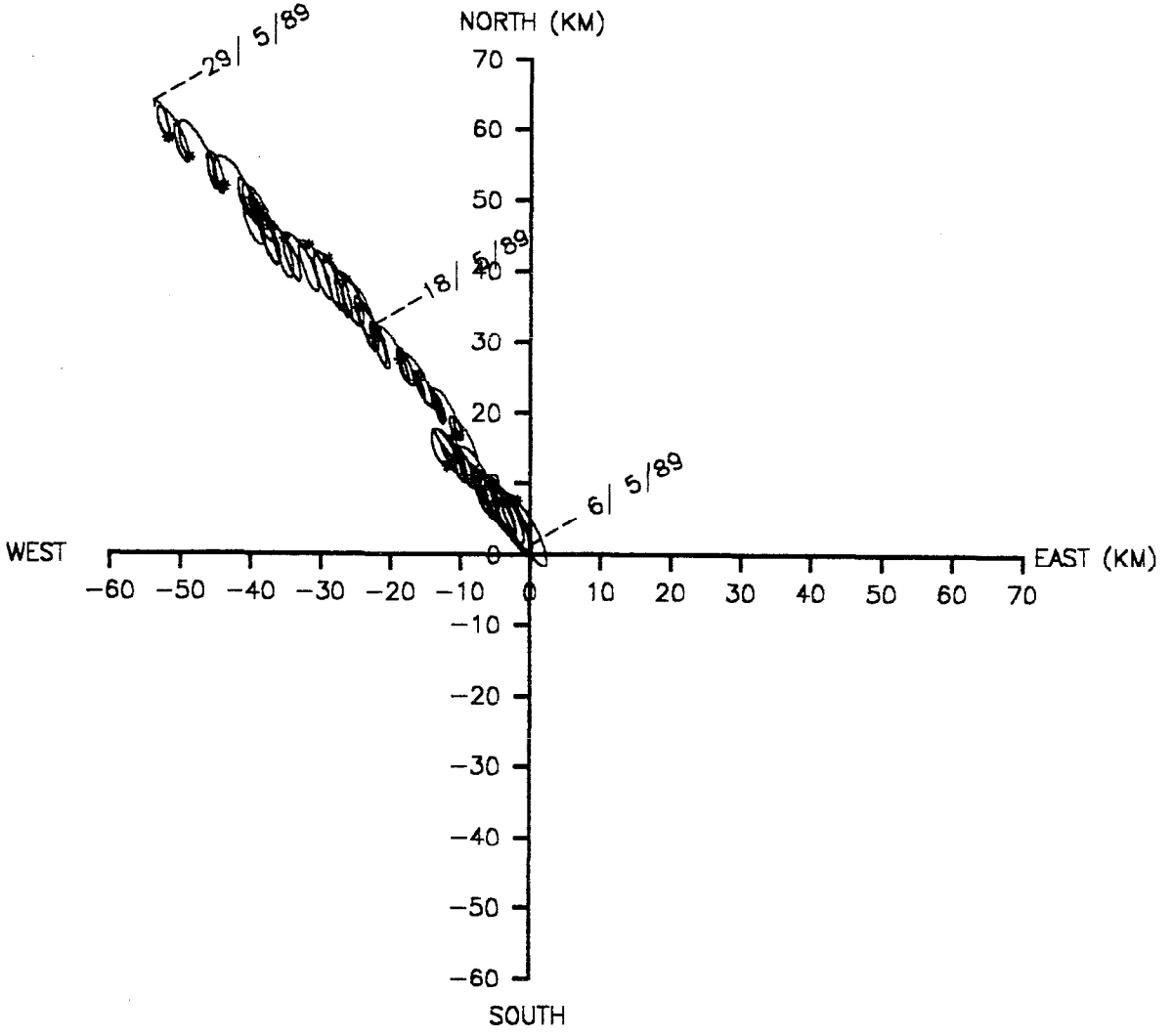
VECTOR PLOT

Meter no. 0003 Rig no. C51CC Depth of water(m) 60.0

Start/End 1989/05/06 AT 16:50:00 1989/06/04 AT 04:40:00

Position 54 19.86N 00 24.21E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0003 C51CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	-0.0275	0.31717185E-01	0.17809325E+00
Northings	0.0321	0.11222935E+00	0.33500654E+00
Speed	0.3457	0.26172630E-01	0.16177958E+00

Vector mean speed 0.0423
Vector Mean Direction -40.6

Maximum ten values

Eastings					Northings				
0.393	0.384	0.384	0.378	0.378	0.720	0.711	0.701	0.700	0.696
0.378	0.376	0.373	0.373	0.372	0.694	0.690	0.686	0.686	0.685

Minimum ten values

Eastings					Northings				
-0.433	-0.433	-0.433	-0.436	-0.440	-0.645	-0.646	-0.648	-0.650	-0.655
-0.443	-0.448	-0.450	-0.456	-0.458	-0.663	-0.670	-0.674	-0.677	-0.679

Maximum speeds

0.795	0.779	0.775	0.775	0.773	0.773	0.772	0.770	0.770	0.768
0.763	0.762	0.761	0.759	0.757	0.756	0.755	0.755	0.754	0.750
0.749	0.742	0.741	0.740	0.740	0.738	0.738	0.734	0.734	0.734
0.731	0.730	0.730	0.730	0.729	0.729	0.727	0.727	0.724	0.724
0.724	0.723	0.723	0.721	0.721	0.718	0.713	0.713	0.713	0.713
0.711	0.711	0.710	0.708	0.705	0.704	0.703	0.700	0.695	0.694
0.694	0.694	0.694	0.693	0.693	0.693	0.692	0.690	0.689	0.687
0.686	0.685	0.681	0.678	0.675	0.673	0.673	0.670	0.669	0.666
0.666	0.664	0.663	0.663	0.663	0.663	0.662	0.662	0.660	0.659
0.659	0.659	0.659	0.659	0.658	0.656	0.654	0.653	0.652	0.651

Variance ellipse statistics

Maximum variance 0.1339E+00 Direction -24.7

Minimum variance 0.1002E-01 Direction 65.3

Total variance 0.1439E+00 Ratio of variances 0.7484E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 1.4

Average direction. maxdir +PI/2 to maxdir -PI/2 181.1

Statistics for DP0003 C51CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	-0.0249	0.35630446E-03	0.18876035E-01
Northings	0.0300	0.11511020E-03	0.10728940E-01
Speed	0.0429	0.14795865E-03	0.12163829E-01

Vector mean speed 0.0390
Vector Mean Direction -39.7

Maximum ten values

Eastings					Northings				
0.032	0.028	0.028	0.017	0.017	0.050	0.048	0.047	0.046	0.045
0.003	0.001	0.001	-0.003	-0.003	0.044	0.044	0.043	0.043	0.042

Minimum ten values

Eastings					Northings				
-0.043	-0.044	-0.045	-0.047	-0.047	0.024	0.024	0.024	0.016	0.013
-0.047	-0.049	-0.049	-0.050	-0.050	0.008	0.005	0.002	0.001	0.000

Maximum speeds

0.067	0.065	0.064	0.061	0.060	0.059	0.059	0.057	0.056	0.055
0.055	0.054	0.053	0.052	0.052	0.052	0.052	0.052	0.051	0.051
0.050	0.049	0.048	0.048	0.047	0.047	0.047	0.047	0.046	0.044
0.044	0.043	0.043	0.043	0.042	0.042	0.042	0.042	0.041	0.040
0.040	0.040	0.039	0.039	0.039	0.037	0.037	0.037	0.037	0.036
0.036	0.036	0.035	0.034	0.033	0.033	0.032	0.031	0.031	0.031
0.028	0.026	0.026	0.024	0.017	0.014	0.003			

Variance ellipse statistics

Maximum variance 0.4004E-03 Direction -68.5

Minimum variance 0.7105E-04 Direction 21.5

Total variance 0.4714E-03 Ratio of variances 0.1774E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 27.4

Average direction. maxdir +PI/2 to maxdir -PI/2 138.3

Meter information details for 9632

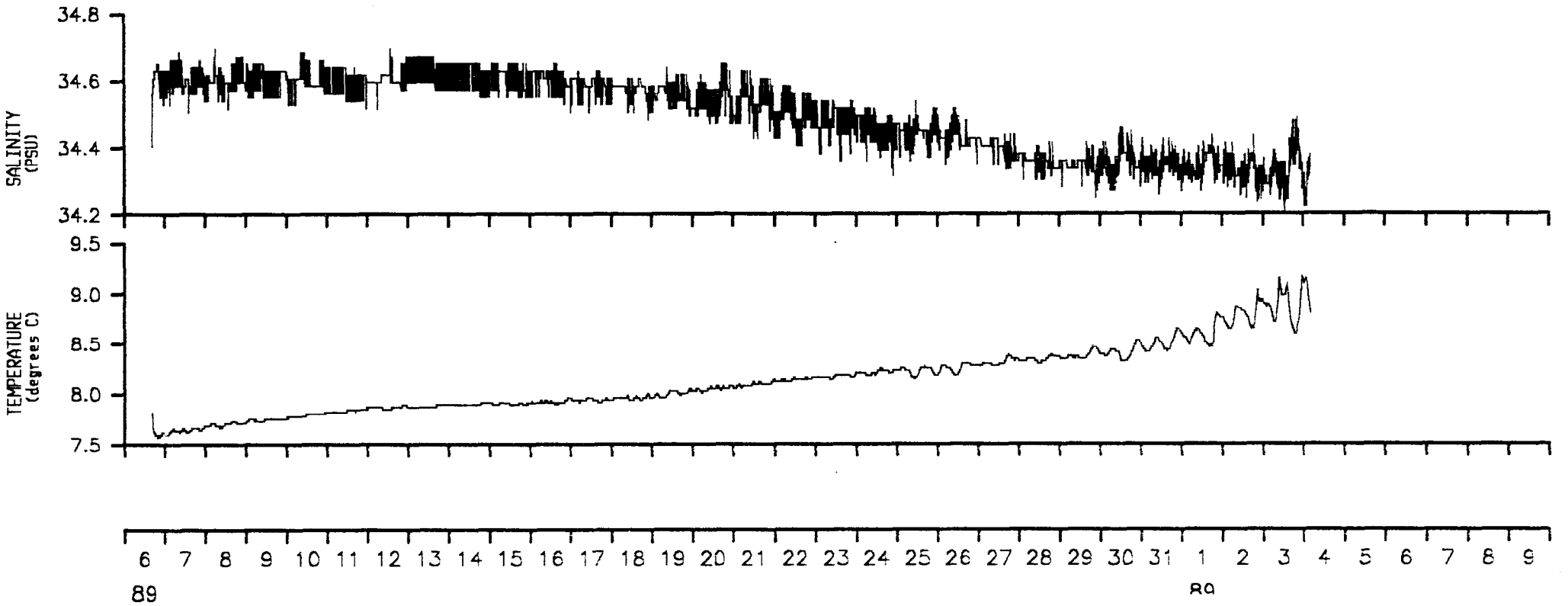
Rig No	:	C51CC
Meter No	:	9632
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AS
Meter started	:	06-MAY-89 15:10:00
Meter stopped	:	06-JUNE-89 14:30:00
Period switched on	:	31.0 days
Period of good data	:	28.5 days
Total number of scans	:	4104
Timing error	:	None
Comments	:	Good record obtained
		No PRESSURE sensor fitted

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 9632 Rig no. C51CC Depth of water(m) 60.0

Start/End 1989/05/06 AT 16:50:00 1989/06/04 AT 04:40:00

Position 54 19.86N 00 24.21E Meter Height(m) 0.8



Rig information details for C53CC

Position Latitude	:	54 20.42N
Position Longitude	:	00 23.63E
Water depth	:	59.0 m
Deployed on cruise	:	C53
Recovered on cruise	:	C55
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	04-JUNE-89 08:02:00
Rig recovered on	:	03-JULY-89 03:50:00
Period of deployment	:	28.8 days
Comments	:	Launch and recovery successful

Meter information details for 0001

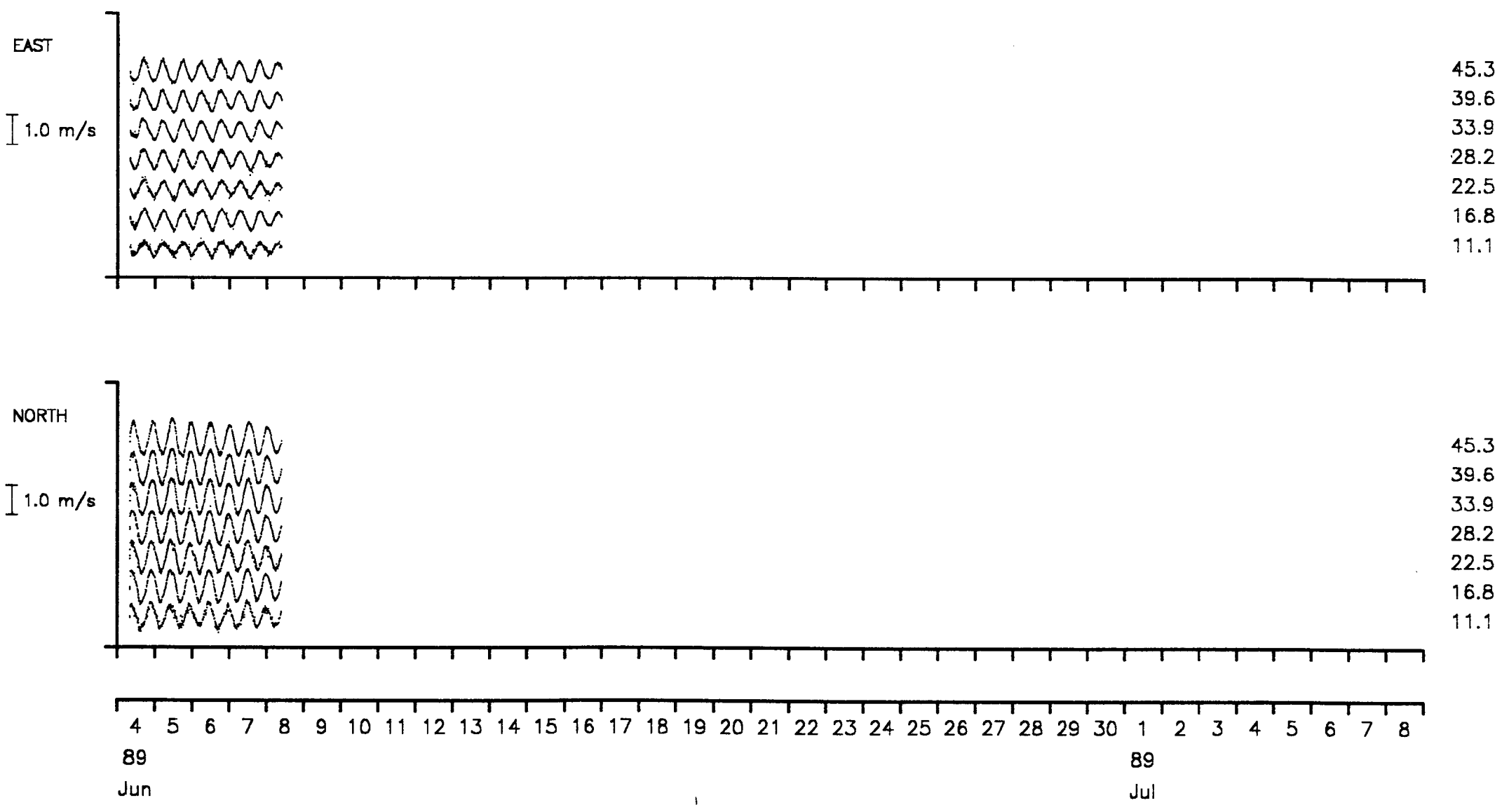
Rig No	:	C53CC
Meter No	:	0001
Frame angle correction	:	183.5 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	03-JUNE-89 19:47:10
Time of last valid scan	:	08-JUNE-89 09:47:03
Period of good data	:	4.0 days short record
Total number of scans	:	583
Timing error	:	7 seconds fast
Comments	:	Meter began to sample every hour giving zero beam components after 09:47:03 on 08-JUNE-89 Two increments of 30 minutes instead of 10 minutes every 219 scans

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0001 Rig no. C53CC Depth of water(m) 59.0

Start/End 1989/06/04 AT 08:02:00 1989/07/03 AT 03:50:00

Position 54 20.42N 00 23.63E 11.1 Base Ht 5.7 Gap Ht

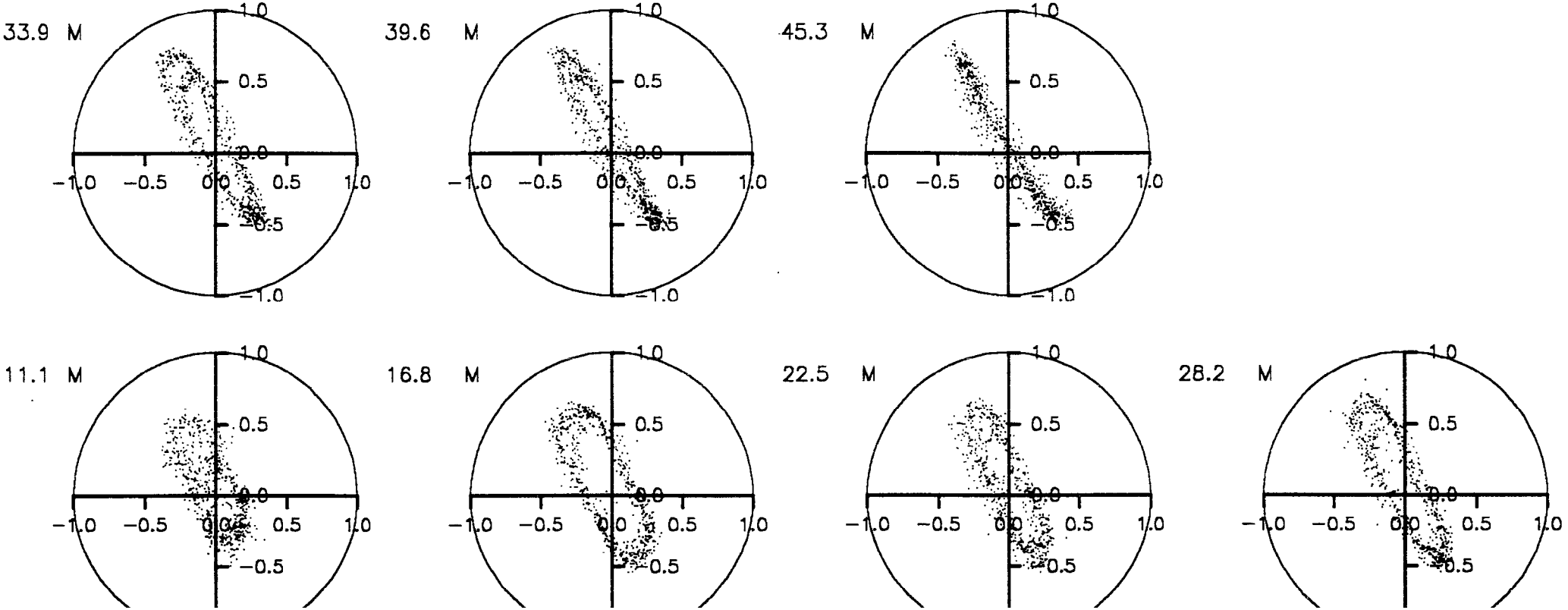


SCATTER PLOT

Meter no. 0001 Rig no. C53CC Depth of water(m) 59.0

Start/End 1989/06/04 AT 08:02:00 1989/07/03 AT 03:50:00

Position 54 20.42N 00 23.63E 11.1 Base Ht 5.7 Gap Ht



STATISTICS FOR DP0001 C53CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.047	-21.4	0.0856	-25.0	0.0130	65.0
2	16.8	0.071	-24.9	0.1559	-25.9	0.0186	64.1
3	22.5	0.056	-4.5	0.1396	-24.7	0.0113	65.3
4	28.2	0.077	-7.9	0.1756	-26.4	0.0107	63.6
5	33.9	0.083	-2.7	0.1947	-27.7	0.0076	62.3
6	39.6	0.080	0.5	0.2081	-29.1	0.0046	60.9
7	45.3	0.067	1.5	0.2018	-31.5	0.0027	58.5

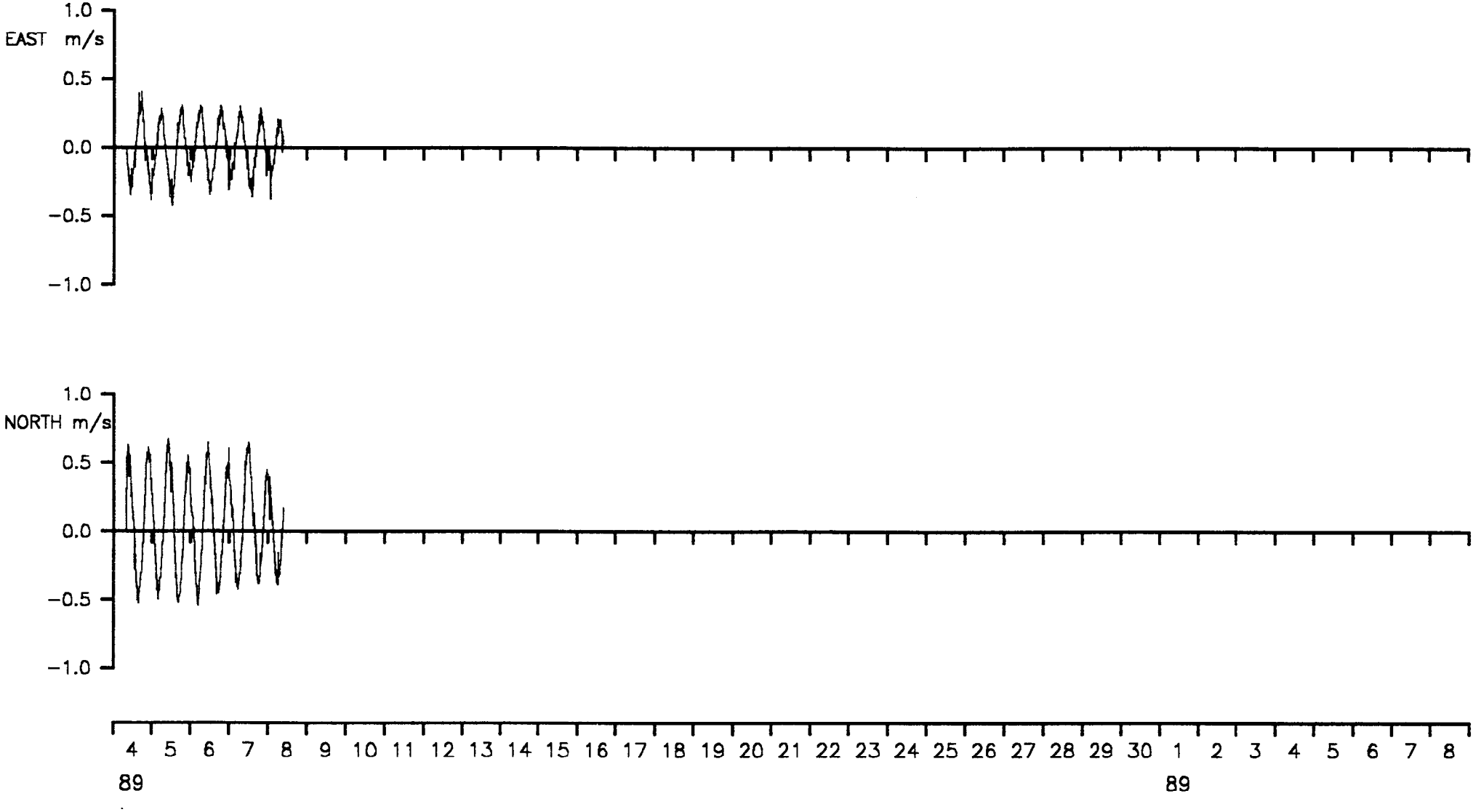
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0001 Rig no. C53CC Depth of water(m) 59.0

Start/End 1989/06/04 AT 08:02:00 1989/07/03 AT 03:50:00

Position 54 20.42N 00 23.63E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



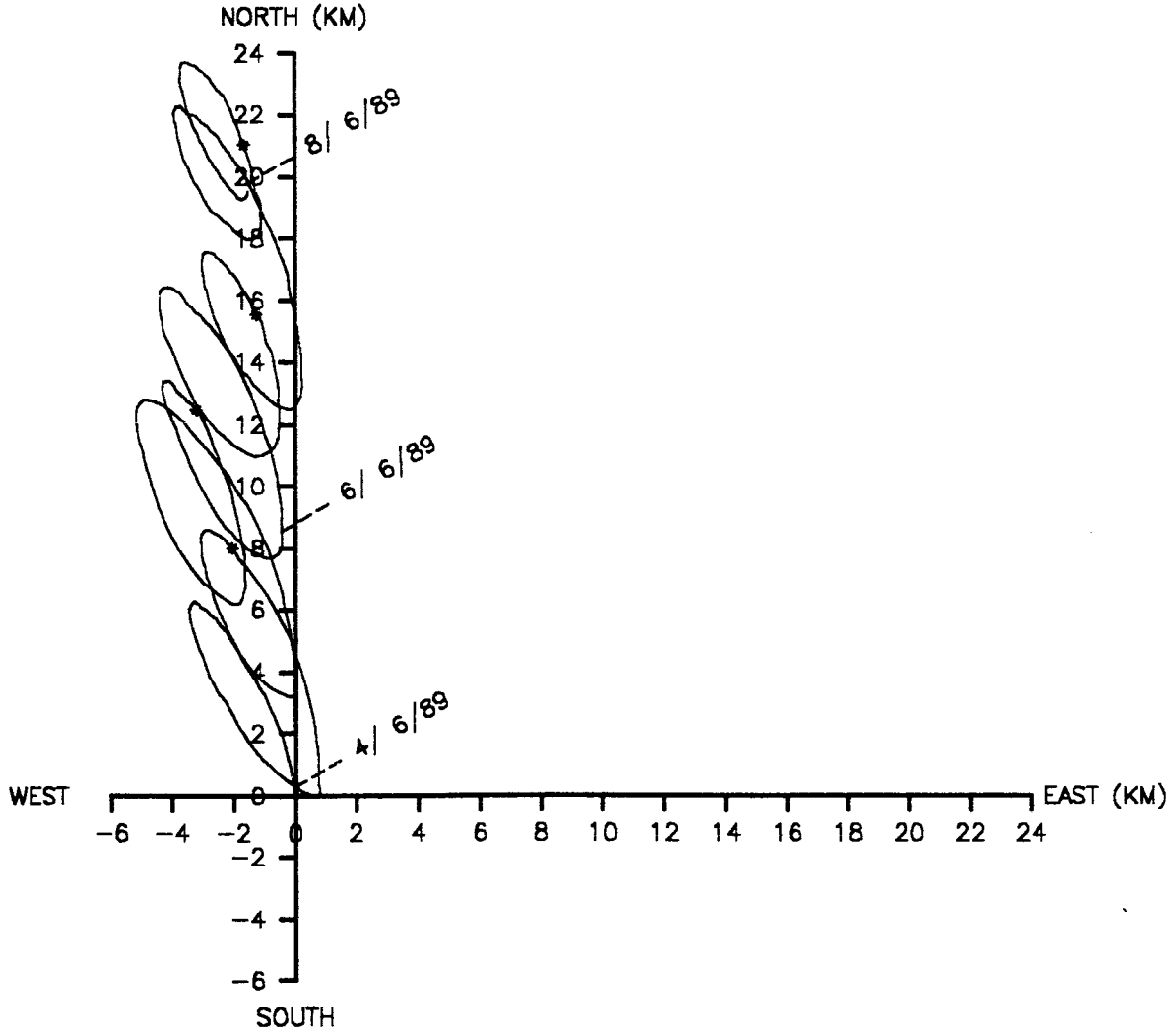
VECTOR PLOT

Meter no. 0001 Rig no. C53CC Depth of water(m) 59.0

Start/End 1989/06/04 AT 08:02:00 1989/07/03 AT 03:50:00

Position 54 20.42N 00 23.63E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0001 C53CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	-0.0043	0.33697776E-01	0.18356943E+00
Northings	0.0554	0.11715078E+00	0.34227306E+00
Speed	0.3578	0.25715843E-01	0.16036159E+00

Vector mean speed 0.0556
Vector Mean Direction -4.5

Maximum ten values

Eastings					Northings				
0.408	0.395	0.320	0.313	0.311	0.675	0.663	0.650	0.650	0.636
0.309	0.306	0.306	0.301	0.298	0.630	0.629	0.629	0.629	0.627

Minimum ten values

Eastings					Northings				
-0.347	-0.356	-0.359	-0.361	-0.367	-0.494	-0.494	-0.499	-0.502	-0.507
-0.379	-0.388	-0.402	-0.404	-0.426	-0.509	-0.518	-0.518	-0.524	-0.541

Maximum speeds

0.705	0.703	0.695	0.694	0.691	0.688	0.686	0.685	0.677	0.664
0.661	0.659	0.656	0.656	0.656	0.653	0.652	0.651	0.650	0.646
0.642	0.641	0.640	0.639	0.638	0.636	0.636	0.634	0.627	0.620
0.619	0.616	0.616	0.615	0.615	0.614	0.613	0.610	0.609	0.606
0.606	0.606	0.604	0.603	0.599	0.598	0.596	0.593	0.593	0.588
0.588	0.588	0.587	0.585	0.583	0.581	0.579	0.578	0.576	0.573
0.570	0.569	0.565	0.565	0.564	0.563	0.561	0.561	0.560	0.560
0.557	0.553	0.553	0.552	0.551	0.551	0.549	0.548	0.548	0.548
0.546	0.544	0.540	0.540	0.540	0.539	0.539	0.538	0.537	0.536
0.536	0.536	0.533	0.533	0.533	0.532	0.530	0.528	0.528	0.525

Variance ellipse statistics

Maximum variance 0.1396E+00 Direction -24.7

Minimum variance 0.1125E-01 Direction 65.3

Total variance 0.1508E+00 Ratio of variances 0.8059E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 2.5

Average direction. maxdir +PI/2 to maxdir -PI/2 174.2

Meter information details for 6443

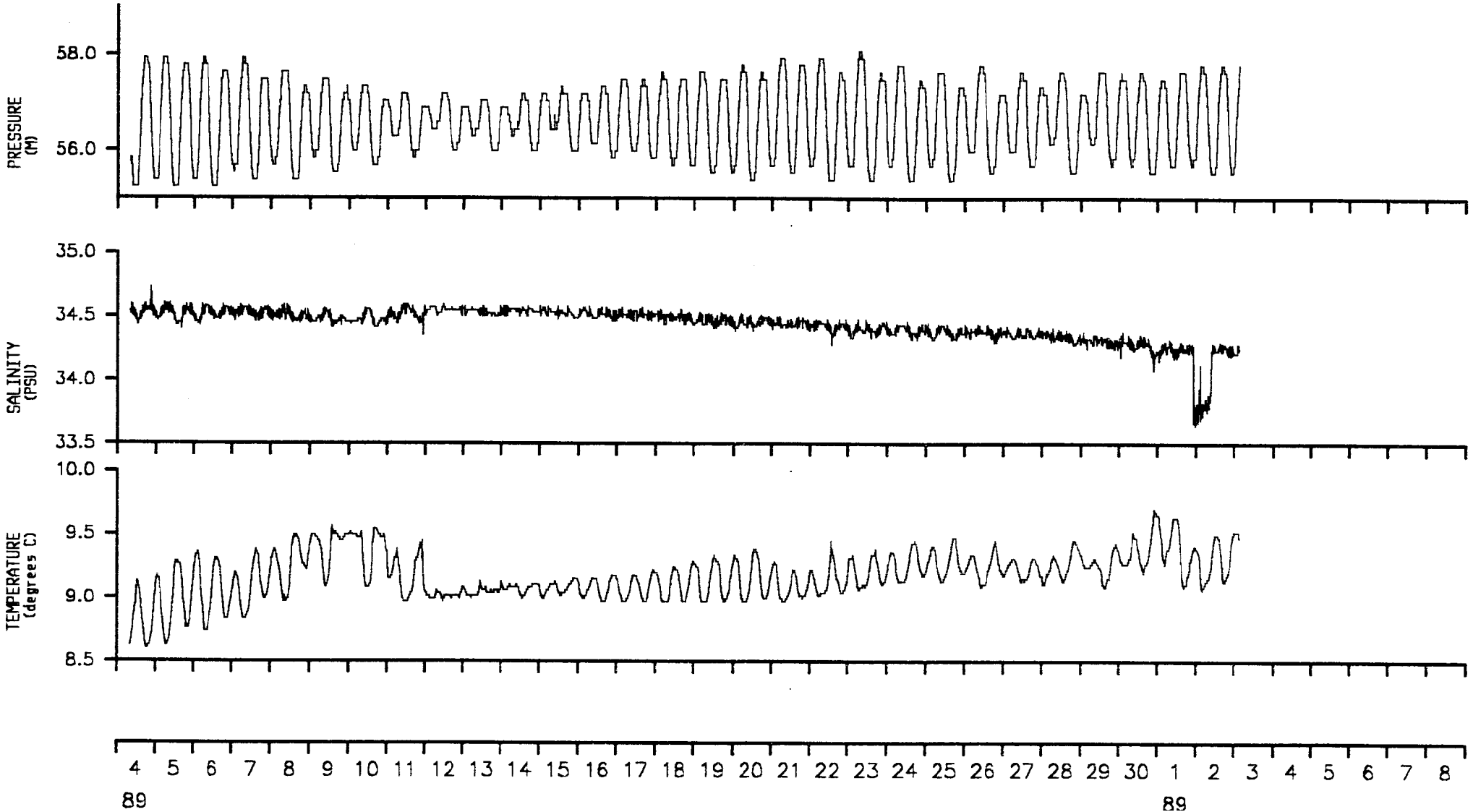
Rig No	:	C53CC
Meter No	:	6443
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AA
Meter started	:	03-JUNE-89 13:30:00
Meter stopped	:	04-JULY-89 11:21:31
Period switched on	:	30.9 days
Period of good data	:	28.8 days
Total number of scans	:	4150
Timing error	:	91 seconds slow
Comments	:	Good record obtained

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 6443 Rig no. C53CC Depth of water(m) 59.0

Start/End 1989/06/04 AT 08:02:00 1989/07/03 AT 03:50:00

Position 54 20.42N 00 23.63E Meter Height(m) 0.8



Rig information details for C55CC

Position Latitude	:	54 20.39N
Position Longitude	:	00 23.70E
Water depth	:	59.0 m
Deployed on cruise	:	C55
Recovered on cruise	:	TRAWLED
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	03-JULY-89 05:40:00
Rig recovered on	:	01-AUG-89 05:37:00
Period of deployment	:	29.0 days
Comments	:	Rig trawled up on 01-AUG-89

Meter information details for 0002

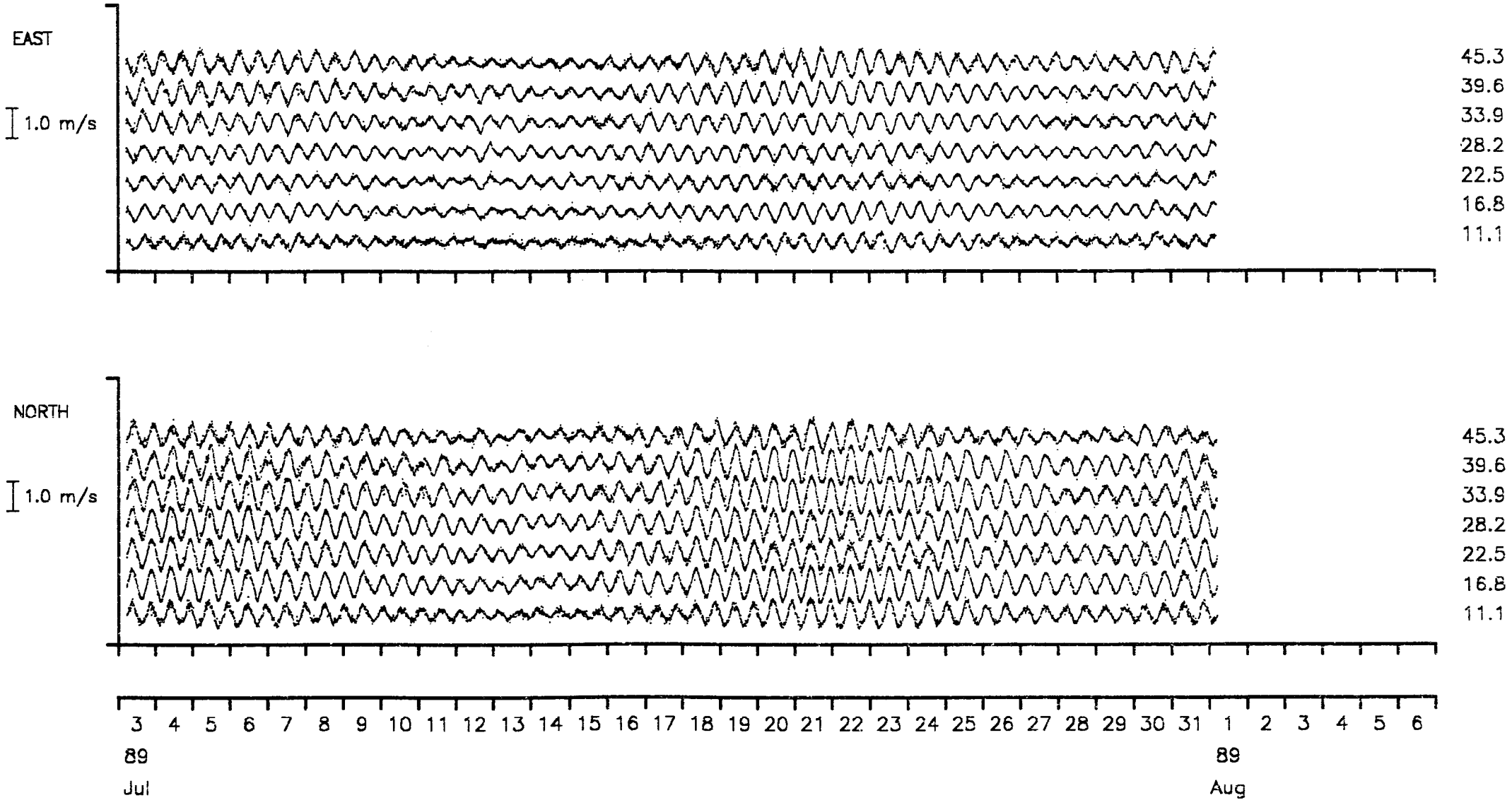
Rig No	:	C55CC
Meter No	:	0002
Frame angle correction	:	-14.9 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	03-JULY-89 05:37:11
Meter stopped	:	01-AUG-89 05:47:04
Period switched on	:	29.0 days
Period of good data	:	29.0 days
Total number of scans	:	4175
Timing error	:	7 seconds fast
Comments	:	Good record obtained before being trawled up

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C55CC Depth of water(m) 59.0

Start/End 1989/07/03 AT 05:40:00 1989/08/01 AT 05:37:00

Position 54 20.39N 00 23.70E 11.1 Base Ht 5.7 Gap Ht

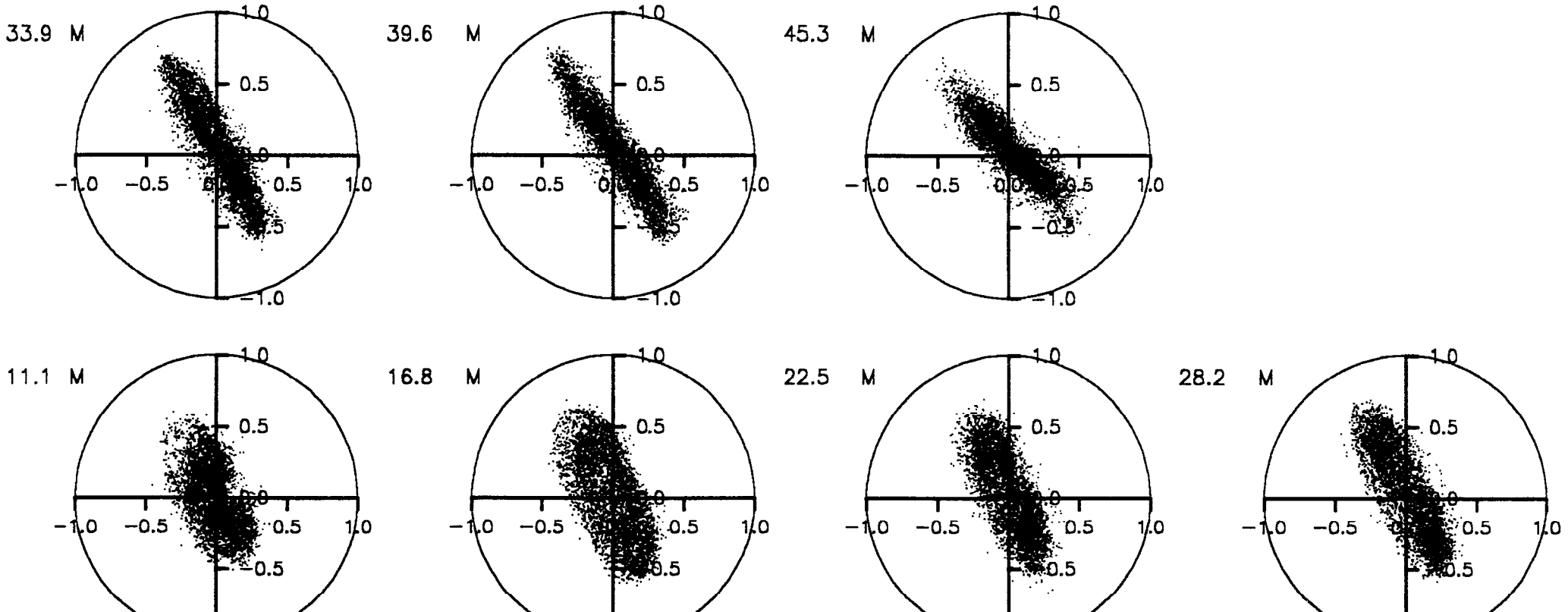


SCATTER PLOT

Meter no. 0002 Rig no. C55CC Depth of water(m) 59.0

Start/End 1989/07/03 AT 05:40:00 1989/08/01 AT 05:37:00

Position 54 20.39N 00 23.70E 11.1 Base Ht 5.7 Gap Ht



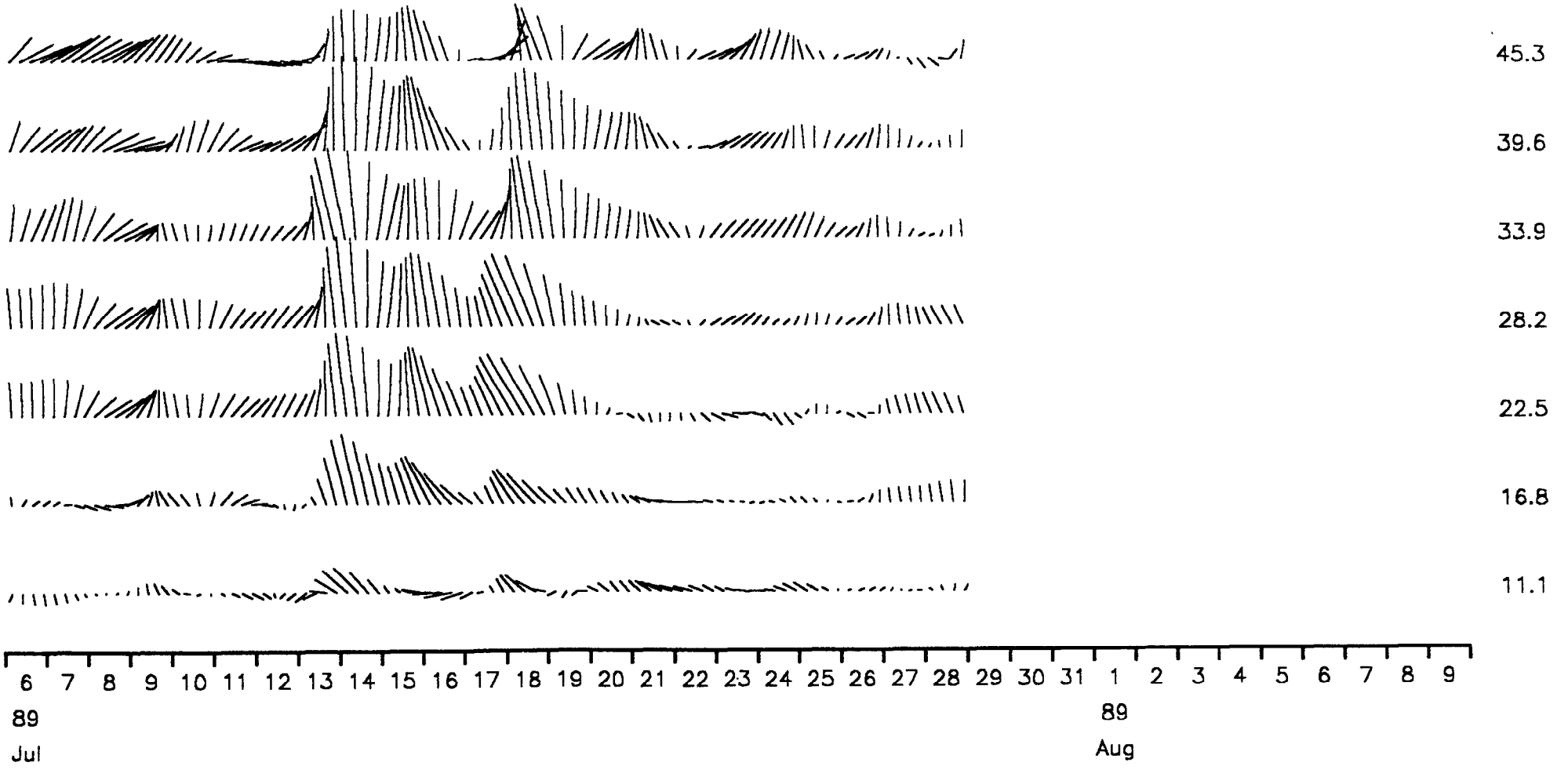
STICK TIME SERIES PLOT

Meter no. 0002 Rig no. C55CC Depth of water(m) 59.0

Start/End 1989/07/03 AT 05:40:00 1989/08/01 AT 05:37:00

Position 54 20.39N 00 23.70E 11.1 Base Ht 5.7 Gap Ht

Scale 0.1 m/s



STATISTICS FOR DP0002 C55CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.012	-60.4	0.0572	-22.6	0.0115	67.4
2	16.8	0.025	-13.4	0.1044	-23.2	0.0139	66.8
3	22.5	0.042	4.2	0.0939	-24.7	0.0087	65.3
4	28.2	0.053	5.5	0.1118	-27.3	0.0082	62.7
5	33.9	0.053	11.1	0.1198	-29.6	0.0054	60.4
6	39.6	0.054	18.2	0.1235	-33.8	0.0046	56.2
7	45.3	0.043	34.0	0.0790	-43.7	0.0049	46.3

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.013	-73.4	0.0003	-58.6	0.0001	31.4
2	16.8	0.024	-19.9	0.0009	-27.6	0.0002	62.4
3	22.5	0.040	1.9	0.0017	-19.6	0.0003	70.4
4	28.2	0.051	3.0	0.0015	-15.8	0.0003	74.2
5	33.9	0.052	10.2	0.0014	-13.7	0.0002	76.3
6	39.6	0.053	15.9	0.0017	-17.7	0.0004	72.3
7	45.3	0.041	32.9	0.0010	-39.9	0.0004	50.1

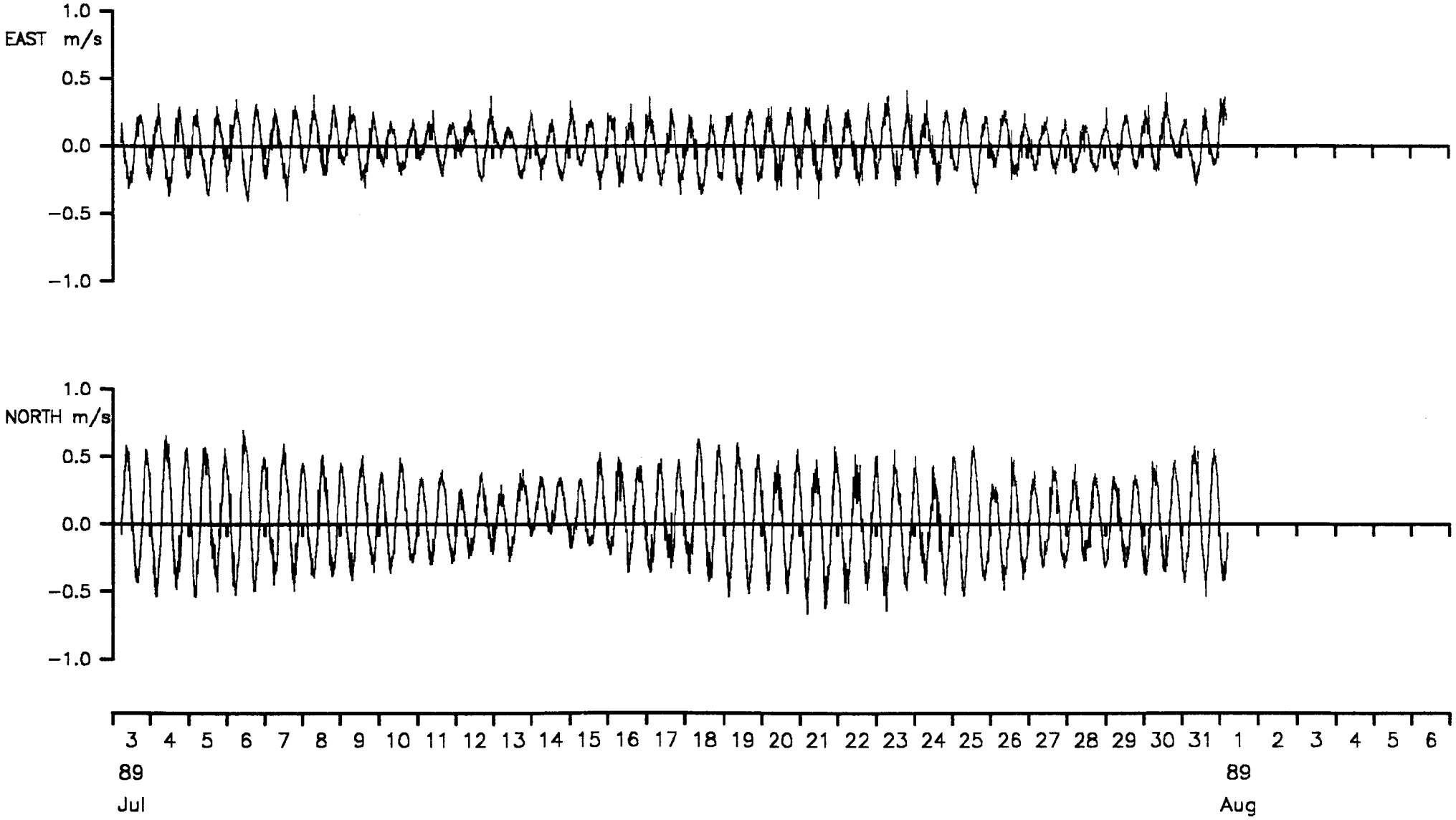
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C55CC Depth of water(m) 59.0

Start/End 1989/07/03 AT 05:40:00 1989/08/01 AT 05:37:00

Position 54 20.39N 00 23.70E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



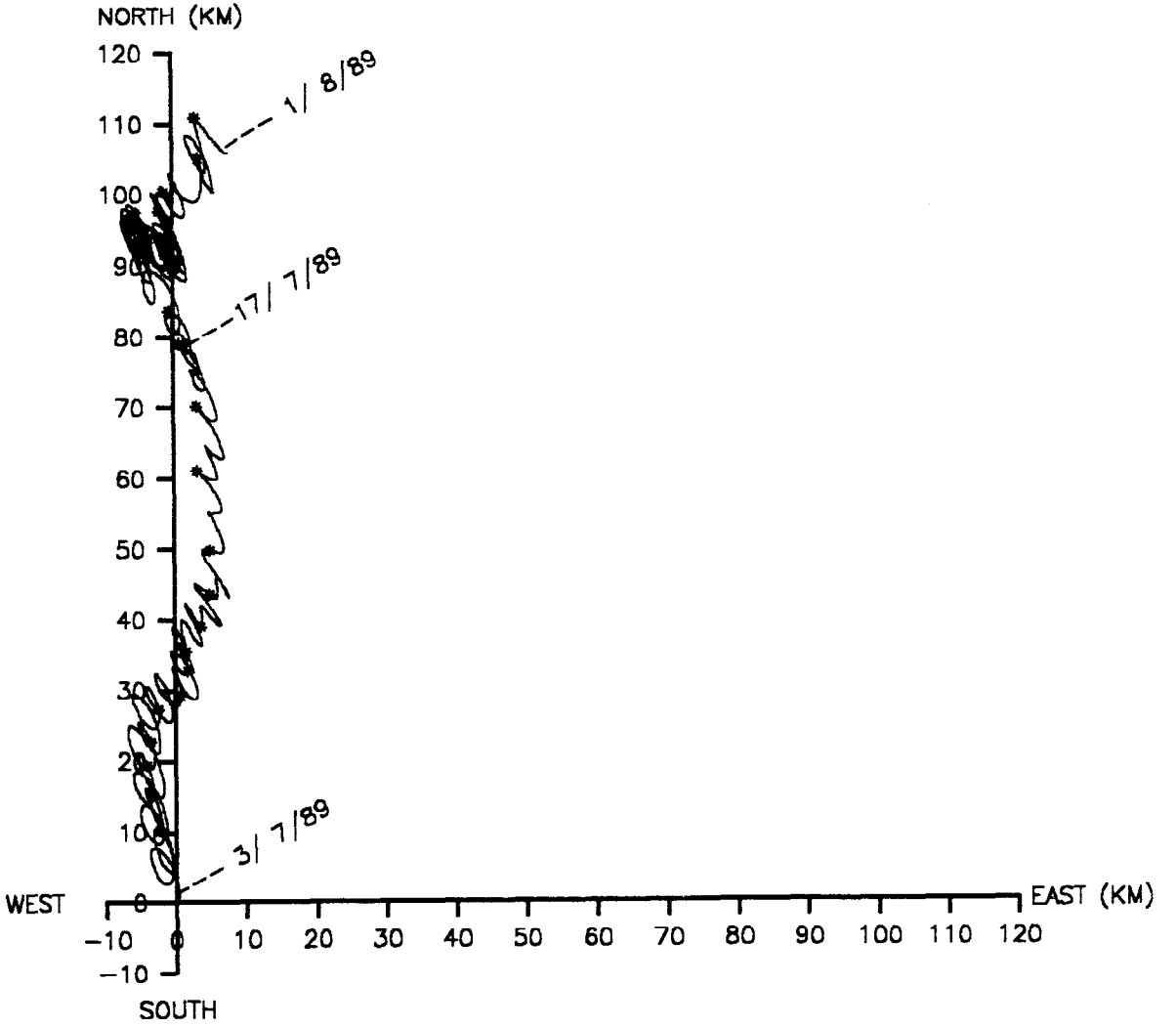
VECTOR PLOT

Meter no. 0002 Rig no. C55CC Depth of water(m) 59.0

Start/End 1989/07/03 AT 05:40:00 1989/08/01 AT 05:37:00

Position 54 20.39N 00 23.70E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0002 C55CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0031	0.23551524E-01	0.15346503E+00
Northings	0.0422	0.79062641E-01	0.28118086E+00
Speed	0.2912	0.19558877E-01	0.13985300E+00

Vector mean speed 0.0423
Vector Mean Direction 4.2

Maximum ten values

Eastings					Northings				
0.410	0.391	0.375	0.370	0.368	0.695	0.653	0.652	0.642	0.629
0.360	0.357	0.357	0.344	0.343	0.627	0.626	0.618	0.617	0.603

Minimum ten values

Eastings					Northings				
-0.362	-0.365	-0.367	-0.373	-0.375	-0.540	-0.541	-0.550	-0.577	-0.579
-0.388	-0.393	-0.393	-0.401	-0.406	-0.589	-0.593	-0.622	-0.643	-0.664

Maximum speeds

0.722	0.716	0.715	0.697	0.694	0.690	0.690	0.680	0.676	0.668
0.655	0.653	0.652	0.652	0.648	0.648	0.646	0.645	0.643	0.643
0.642	0.641	0.639	0.638	0.634	0.632	0.627	0.626	0.625	0.625
0.624	0.623	0.622	0.620	0.620	0.620	0.619	0.618	0.616	0.615
0.614	0.612	0.611	0.607	0.606	0.605	0.605	0.603	0.601	0.601
0.601	0.601	0.600	0.600	0.600	0.599	0.599	0.599	0.597	0.597
0.597	0.597	0.596	0.596	0.595	0.595	0.594	0.591	0.590	0.589
0.589	0.589	0.588	0.588	0.587	0.586	0.585	0.584	0.584	0.583
0.583	0.583	0.581	0.580	0.580	0.579	0.579	0.579	0.578	0.575
0.574	0.574	0.574	0.573	0.572	0.571	0.571	0.571	0.571	0.569

Variance ellipse statistics

Maximum variance 0.9389E-01 Direction -24.7

Minimum variance 0.8718E-02 Direction 65.3

Total variance 0.1026E+00 Ratio of variances 0.9285E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 6.2

Average direction. maxdir +PI/2 to maxdir -PI/2 172.1

Statistics for DP0002 C55CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0013	0.43553067E-03	0.20869367E-01
Northings	0.0401	0.15266298E-02	0.39072111E-01
Speed	0.0491	0.11500884E-02	0.33912953E-01

Vector mean speed 0.0401
Vector Mean Direction 1.9

Maximum ten values

Eastings					Northings				
0.046	0.044	0.041	0.036	0.031	0.139	0.135	0.122	0.116	0.115
0.030	0.028	0.028	0.027	0.026	0.114	0.105	0.102	0.100	0.097

Minimum ten values

Eastings					Northings				
-0.024	-0.028	-0.028	-0.029	-0.032	-0.011	-0.011	-0.012	-0.012	-0.012
-0.041	-0.042	-0.055	-0.055	-0.061	-0.013	-0.013	-0.013	-0.018	-0.019

Maximum speeds

0.140	0.136	0.123	0.118	0.117	0.117	0.116	0.112	0.111	0.106
0.105	0.095	0.093	0.092	0.092	0.092	0.086	0.083	0.071	0.071
0.064	0.062	0.062	0.062	0.062	0.059	0.058	0.057	0.056	0.055
0.055	0.054	0.053	0.052	0.051	0.051	0.050	0.049	0.047	0.046
0.044	0.044	0.044	0.042	0.042	0.042	0.042	0.042	0.041	0.041
0.040	0.040	0.038	0.038	0.038	0.037	0.036	0.036	0.034	0.032
0.030	0.029	0.029	0.028	0.026	0.025	0.024	0.024	0.023	0.021
0.020	0.019	0.018	0.015	0.015	0.015	0.014	0.014	0.014	0.013
0.013	0.013	0.013	0.013	0.012	0.011	0.011	0.010	0.009	0.008
0.008	0.007								

Variance ellipse statistics

Maximum variance 0.1684E-02 Direction -19.6

Minimum variance 0.2778E-03 Direction 70.4

Total variance 0.1962E-02 Ratio of variances 0.1649E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 23.3

Average direction. maxdir +PI/2 to maxdir -PI/2 148.0

Meter information details for 9633

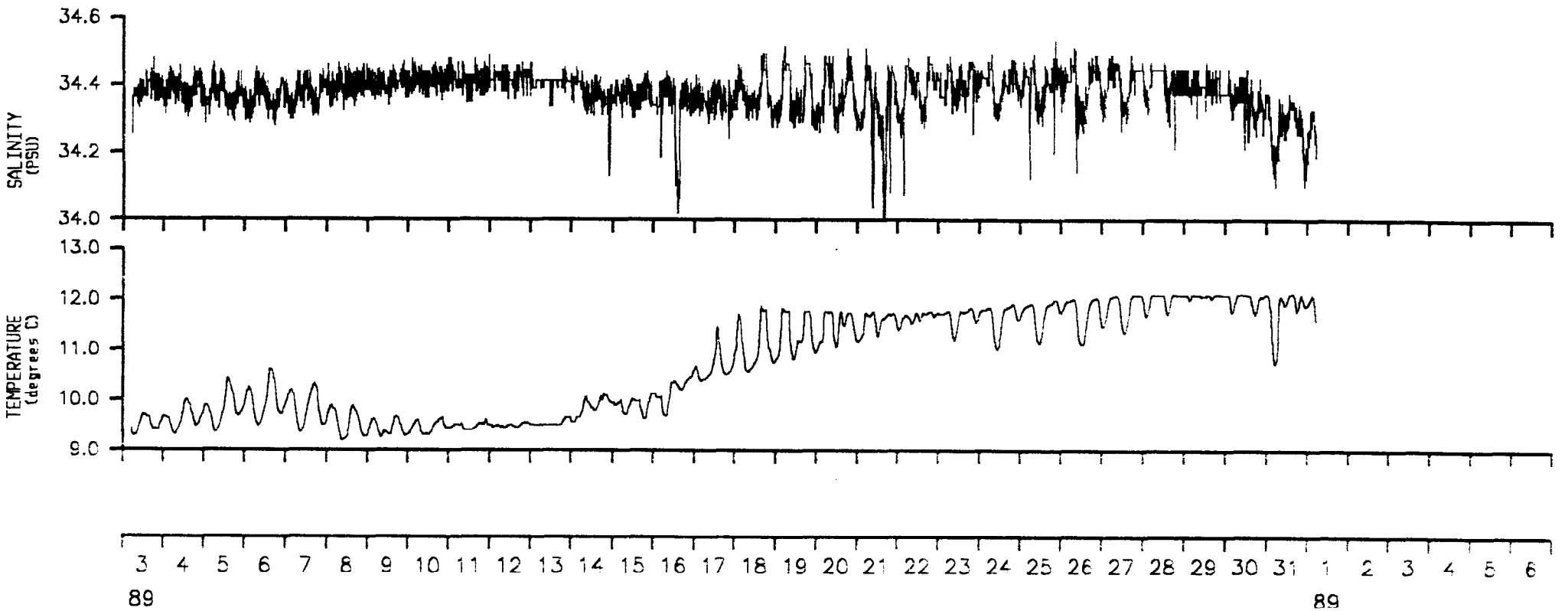
Rig No	:	C55CC
Meter No	:	9633
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AS
Meter started	:	02-JULY-89 11:57:00
Meter stopped	:	04-AUG-89 10:17:00
Period switched on	:	32.9 days
Period of good data	:	29.0 days
Total number of scans	:	4175
Timing error	:	None
Comments	:	Good record obtained
		No PRESSURE sensor fitted to meter

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 9633 Rig no. C55CC Depth of water(m) 59.0

Start/End 1989/07/03 AT 05:40:00 1989/08/01 AT 05:37:00

Position 54 20.39N 00 23.70E Meter Height(m) 0.8



Rig information details for C57CC

Position Latitude	:	54 20.40N
Position Longitude	:	00 23.76E
Water depth	:	60.0 m
Deployed on cruise	:	C57
Recovered on cruise	:	C59
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	05-AUG-89 06:48:00
Rig recovered on	:	01-SEPT-89 05:30:00
Period of deployment	:	26.9 days
Comments	:	Launch and recovery successful

Meter information details for 0004

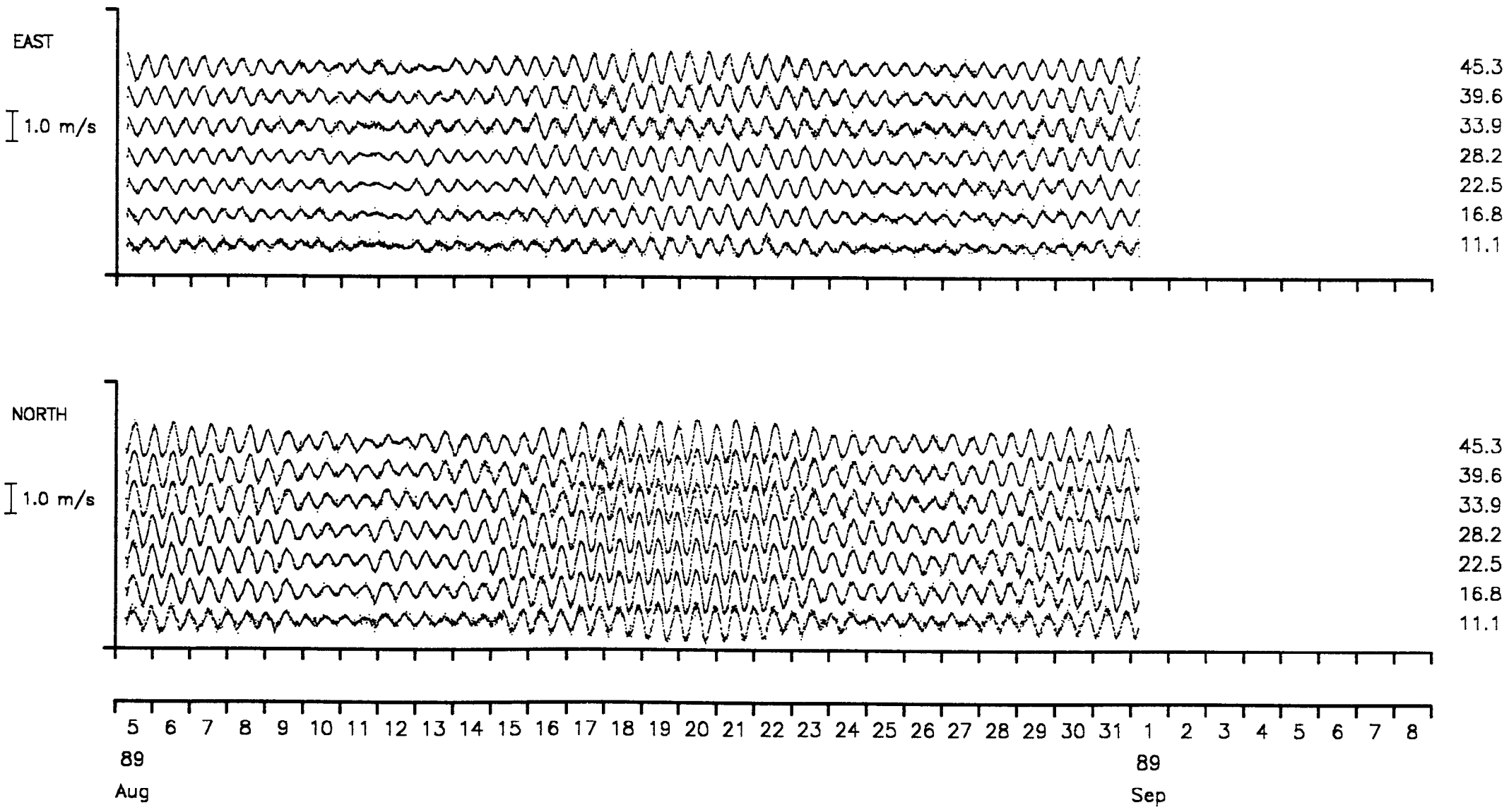
Rig No	:	C57CC
Meter No	:	0004
Frame angle correction	:	-0.9 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	05-AUG-89 05:36:50
Meter stopped	:	01-SEPT-89 07:27:00
Period switched on	:	27.1 days
Period of good data	:	26.9 days
Total number of scans	:	3880
Timing error	:	10 seconds slow
Comments	:	Corrupted hexadecimal present in raw data e.g F7's instead of FF's F6's instead of FE's

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0004 Rig no. C57CC Depth of water(m) 60.0

Start/End 1989/08/05 AT 06:48:00 1989/09/01 AT 05:30:00

Position 54 20.40N 00 23.76E 11.1 Base Ht 5.7 Gap Ht

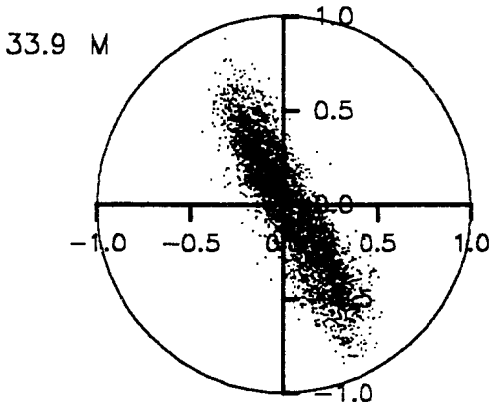


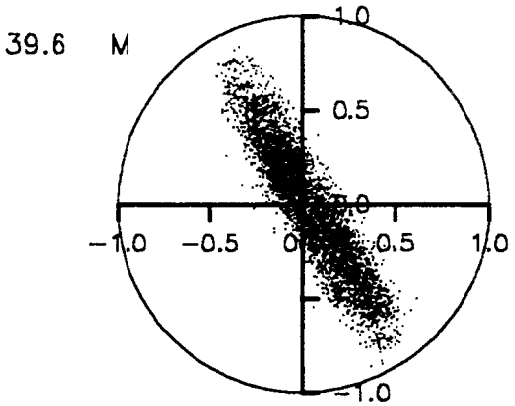
SCATTER PLOT

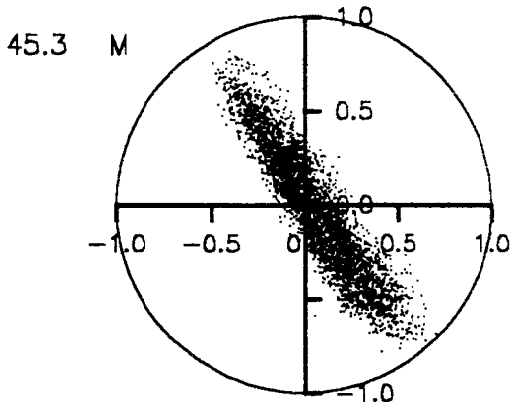
Meter no. 0004 Rig no. C57CC Depth of water(m) 60.0

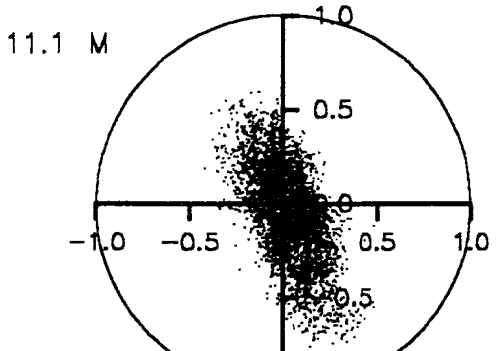
Start/End 1989/08/05 AT 06:48:00 1989/09/01 AT 05:30:00

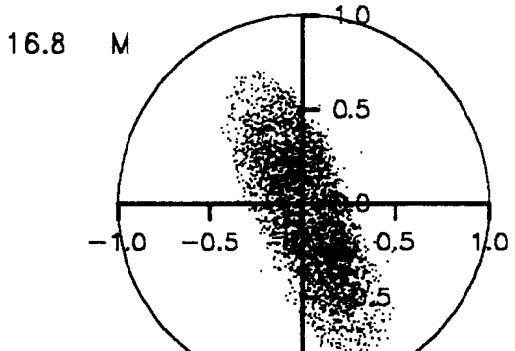
Position 54 20.40N 00 23.76E 11.1 Base Ht 5.7 Gap Ht

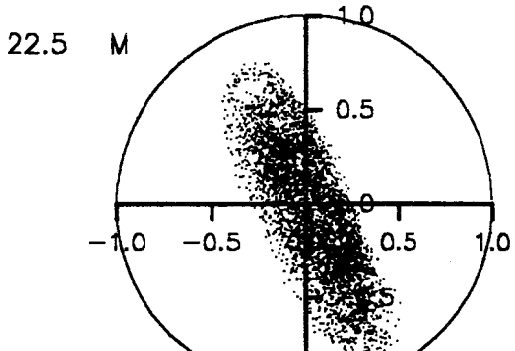


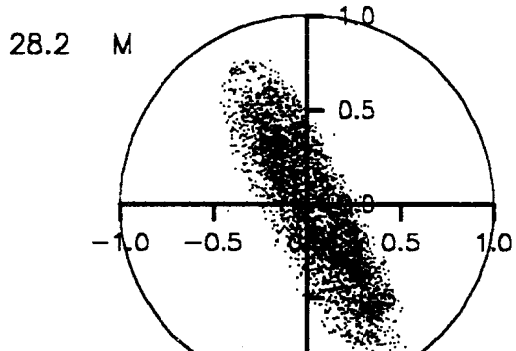












STICK TIME SERIES PLOT

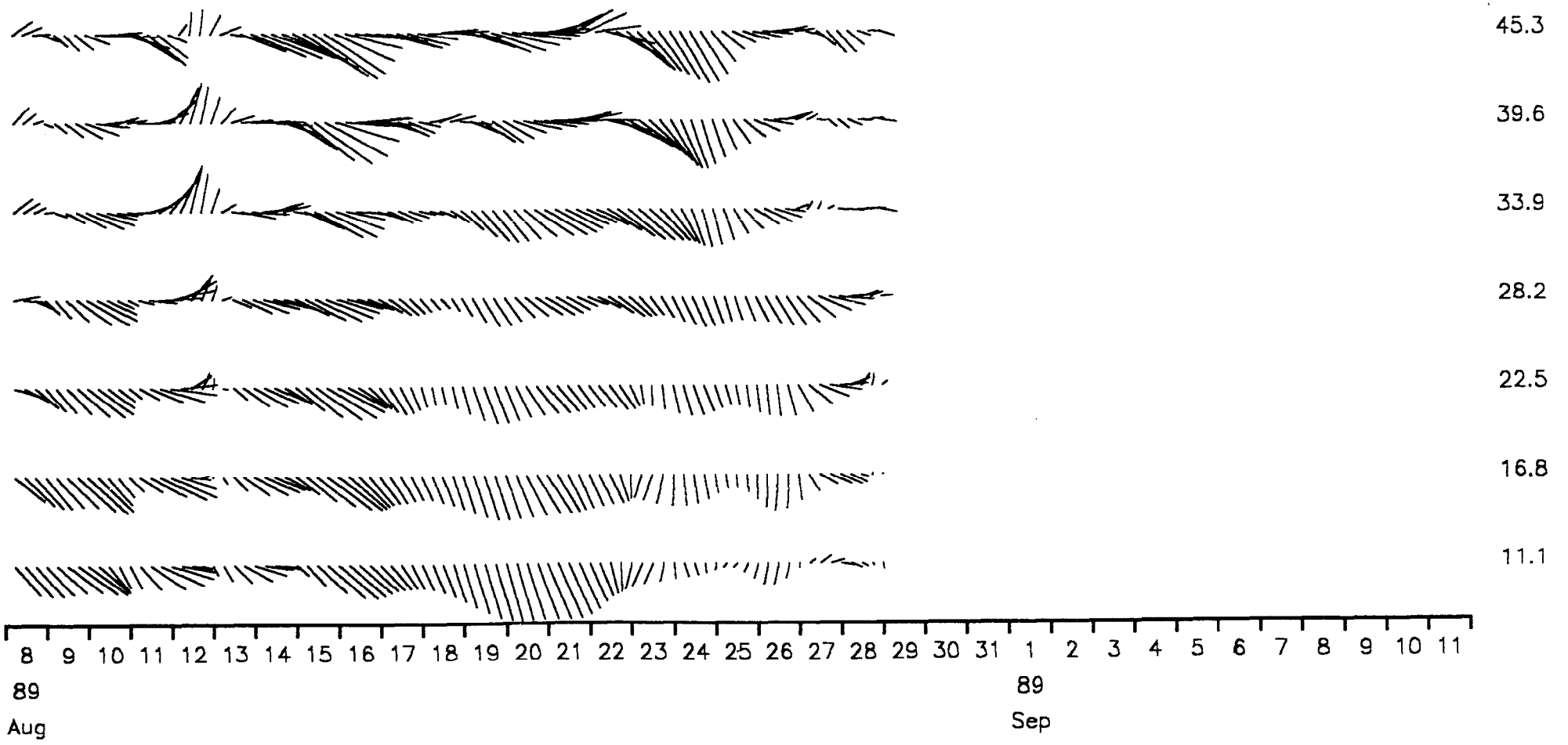
Meter no. 0004 Rig no. C57CC Depth of water(m) 60.0

Start/End 1989/08/05 AT 06:48:00 1989/09/01 AT 05:30:00

Position 54 20.40N 00 23.76E 11.1 Base Ht 5.7 Gap Ht

——— Bin Ht (m)

Scale 0.1 m/s



STATISTICS FOR DP0004 C57CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.049	145.7	0.0691	-21.1	0.0106	68.9
2	16.8	0.053	143.6	0.1154	-22.1	0.0133	67.9
3	22.5	0.047	134.2	0.1383	-24.7	0.0118	65.3
4	28.2	0.045	120.0	0.1543	-27.6	0.0099	62.4
5	33.9	0.043	111.4	0.1259	-28.4	0.0062	61.6
6	39.6	0.047	103.7	0.1481	-31.3	0.0053	58.7
7	45.3	0.059	108.6	0.1523	-33.4	0.0053	56.6

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.046	145.7	0.0008	-29.3	0.0004	60.7
2	16.8	0.050	145.0	0.0006	-69.3	0.0003	20.7
3	22.5	0.044	134.1	0.0004	-73.2	0.0004	16.8
4	28.2	0.043	118.8	0.0004	18.6	0.0003	108.6
5	33.9	0.043	110.5	0.0010	-17.5	0.0003	72.5
6	39.6	0.050	103.4	0.0010	-23.6	0.0004	66.4
7	45.3	0.063	107.8	0.0011	-39.8	0.0005	50.2

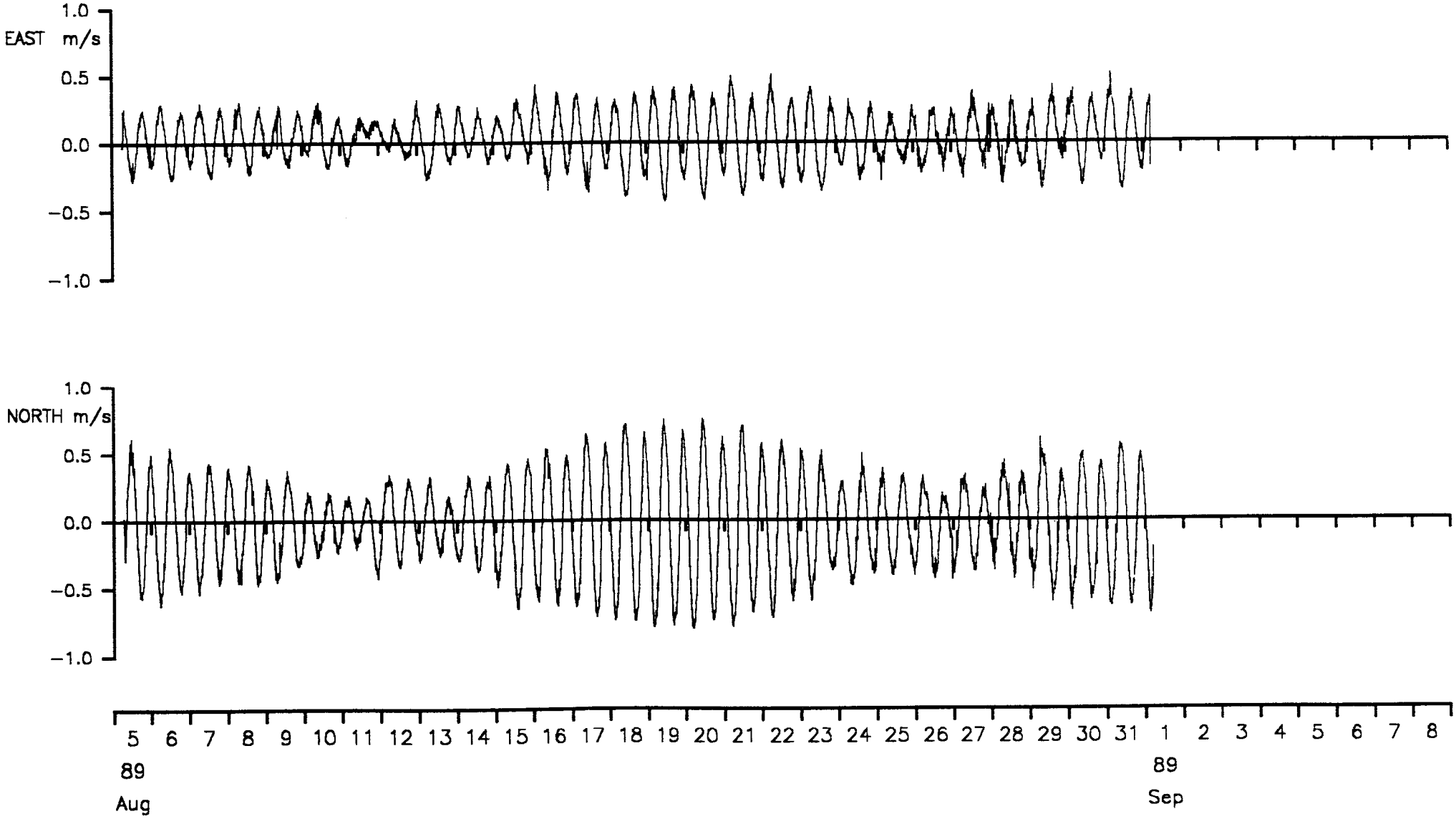
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0004 Rig no. C57CC Depth of water(m) 60.0

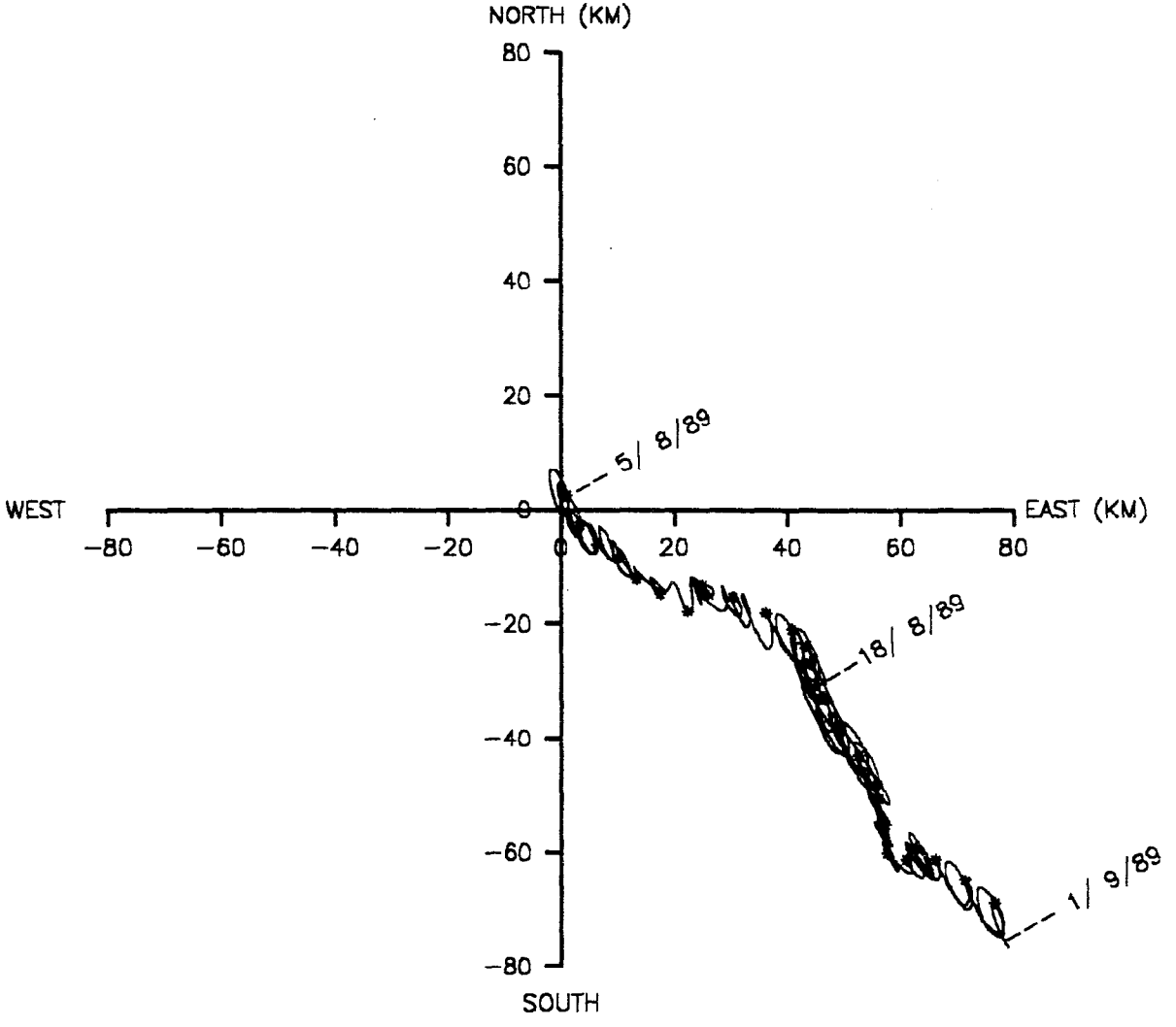
Start/End 1989/08/05 AT 06:48:00 1989/09/01 AT 05:30:00

Position 54 20.40N 00 23.76E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



VECTOR PLOT
Meter no. 0004 Rig no. C57CC Depth of water(m) 60.0
Start/End 1989/08/05 AT 06:48:00 1989/09/01 AT 05:30:00
Position 54 20.40N 00 23.76E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)
Bin closest to depth average



Statistics for DP0004 C57CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0339	0.33807006E-01	0.18386686E+00
Northings	-0.0330	0.11628246E+00	0.34100217E+00
Speed	0.3452	0.33140820E-01	0.18204618E+00

Vector mean speed 0.0473
Vector Mean Direction 134.2

Maximum ten values

Eastings					Northings				
0.505	0.497	0.490	0.483	0.479	0.746	0.744	0.741	0.740	0.720
0.467	0.460	0.454	0.450	0.447	0.714	0.711	0.708	0.706	0.695

Minimum ten values

Eastings					Northings				
-0.411	-0.412	-0.413	-0.414	-0.422	-0.779	-0.781	-0.783	-0.785	-0.787
-0.425	-0.427	-0.427	-0.430	-0.436	-0.789	-0.793	-0.802	-0.808	-0.809

Maximum speeds

0.890	0.883	0.880	0.879	0.873	0.868	0.865	0.865	0.860	0.856
0.854	0.853	0.850	0.847	0.845	0.842	0.839	0.838	0.837	0.835
0.831	0.826	0.824	0.822	0.817	0.817	0.814	0.814	0.813	0.812
0.812	0.812	0.811	0.809	0.807	0.805	0.804	0.803	0.797	0.797
0.795	0.793	0.792	0.791	0.791	0.788	0.788	0.786	0.786	0.785
0.784	0.782	0.781	0.778	0.778	0.778	0.776	0.775	0.774	0.773
0.773	0.773	0.772	0.772	0.771	0.770	0.770	0.769	0.769	0.767
0.767	0.767	0.765	0.765	0.765	0.764	0.764	0.764	0.763	0.761
0.760	0.759	0.759	0.759	0.759	0.758	0.757	0.757	0.756	0.756
0.755	0.754	0.754	0.754	0.754	0.752	0.751	0.750	0.749	0.748

Variance ellipse statistics

Maximum variance 0.1383E+00 Direction -24.7

Minimum variance 0.1178E-01 Direction 65.3

Total variance 0.1501E+00 Ratio of variances 0.8516E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 5.5

Average direction. maxdir +PI/2 to maxdir -PI/2 175.7

Statistics for DP0004 C57CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	0.0315	0.44069951E-03	0.20992842E-01
Northings	-0.0306	0.38499618E-03	0.19621324E-01
Speed	0.0496	0.28897612E-03	0.16999301E-01

Vector mean speed 0.0439
Vector Mean Direction 134.1

Maximum ten values

Eastings					Northings				
0.083	0.078	0.078	0.076	0.075	0.026	0.022	0.019	0.018	0.017
0.065	0.064	0.062	0.061	0.060	0.013	0.007	0.006	0.003	-0.001

Minimum ten values

Eastings					Northings				
0.006	0.006	0.006	0.005	0.005	-0.049	-0.049	-0.050	-0.051	-0.051
0.005	0.005	0.004	0.002	0.001	-0.053	-0.055	-0.056	-0.060	-0.061

Maximum speeds

0.097	0.093	0.088	0.080	0.078	0.078	0.078	0.073	0.072	0.072
0.065	0.065	0.064	0.063	0.062	0.061	0.061	0.060	0.060	0.059
0.059	0.058	0.058	0.058	0.057	0.056	0.056	0.054	0.054	0.053
0.053	0.053	0.052	0.052	0.051	0.051	0.051	0.051	0.051	0.051
0.051	0.050	0.050	0.050	0.049	0.049	0.049	0.048	0.048	0.047
0.047	0.047	0.046	0.046	0.046	0.046	0.045	0.044	0.043	0.041
0.041	0.039	0.038	0.038	0.038	0.037	0.035	0.034	0.034	0.033
0.033	0.032	0.032	0.031	0.030	0.029	0.029	0.029	0.027	0.024
0.018	0.017	0.010	0.007						

Variance ellipse statistics

Maximum variance 0.4463E-03 Direction -73.2

Minimum variance 0.3794E-03 Direction 16.8

Total variance 0.8257E-03 Ratio of variances 0.8500E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 82.5

Average direction. maxdir +PI/2 to maxdir -PI/2 206.8

Meter information details for 9631

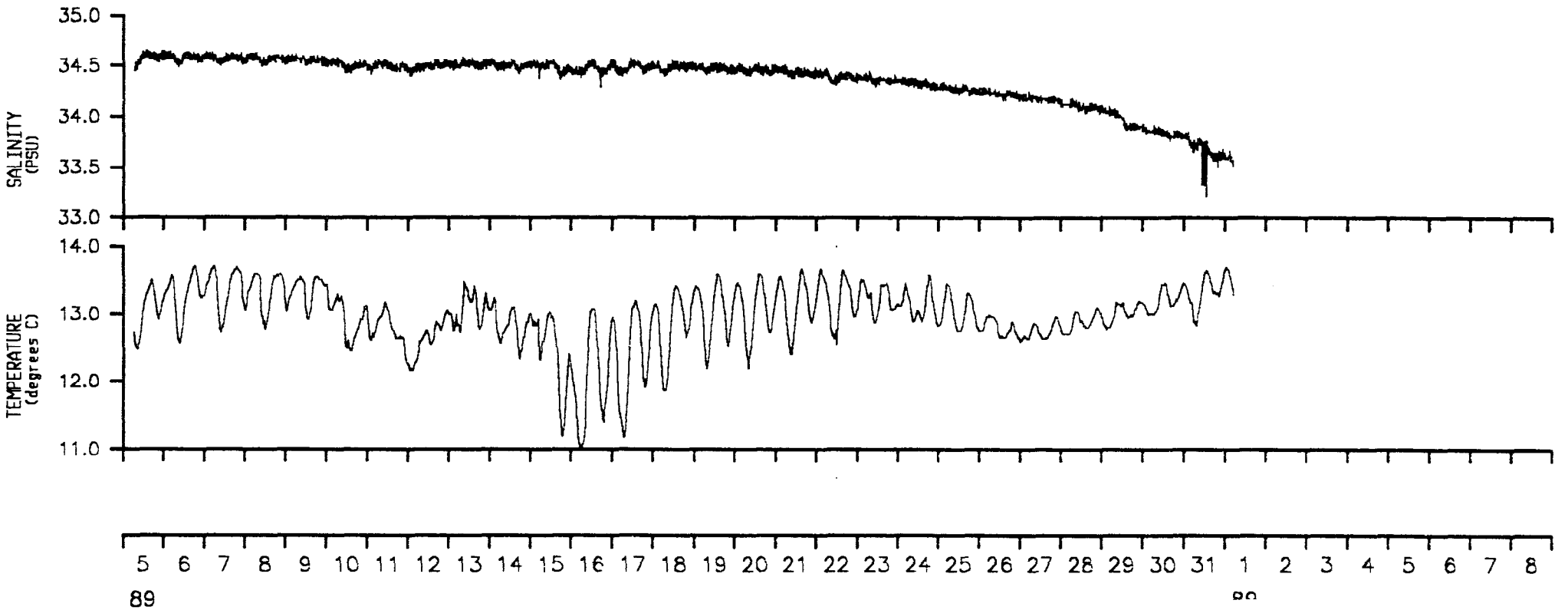
Rig No	:	C57CC
Meter No	:	9631
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AS
Meter started	:	04-AUG-89 14:00:00
Meter stopped	:	01-SEPT-89 17:10:00
Period switched on	:	28.1 days
Period of good data	:	26.9 days
Total number of scans	:	3880
Timing error	:	None
Comments	:	Good record obtained
		No PRESSURE sensor fitted to meter

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 9631 Rig no. C57CC Depth of water(m) 60.0

Start/End 1989/08/05 AT 06:48:00 1989/09/01 AT 05:30:00

Position 54 20.40N 00 23.76E Meter Height(m) 0.8



Rig information details for C59CC

Position Latitude	:	54 20.43N
Position Longitude	:	00 23.94E
Water depth	:	59.0 m
Deployed on cruise	:	C59
Recovered on cruise	:	C61
Site name identification	:	C
Magnetic deviation	:	4.9 degrees west
Rig deployed on	:	01-SEPT-89 06:59:00
Rig recovered on	:	30-SEPT-89 16:00:00
Period of deployment	:	29.4 days
Comments	:	Launch and recovery successful

Meter information details for 0002

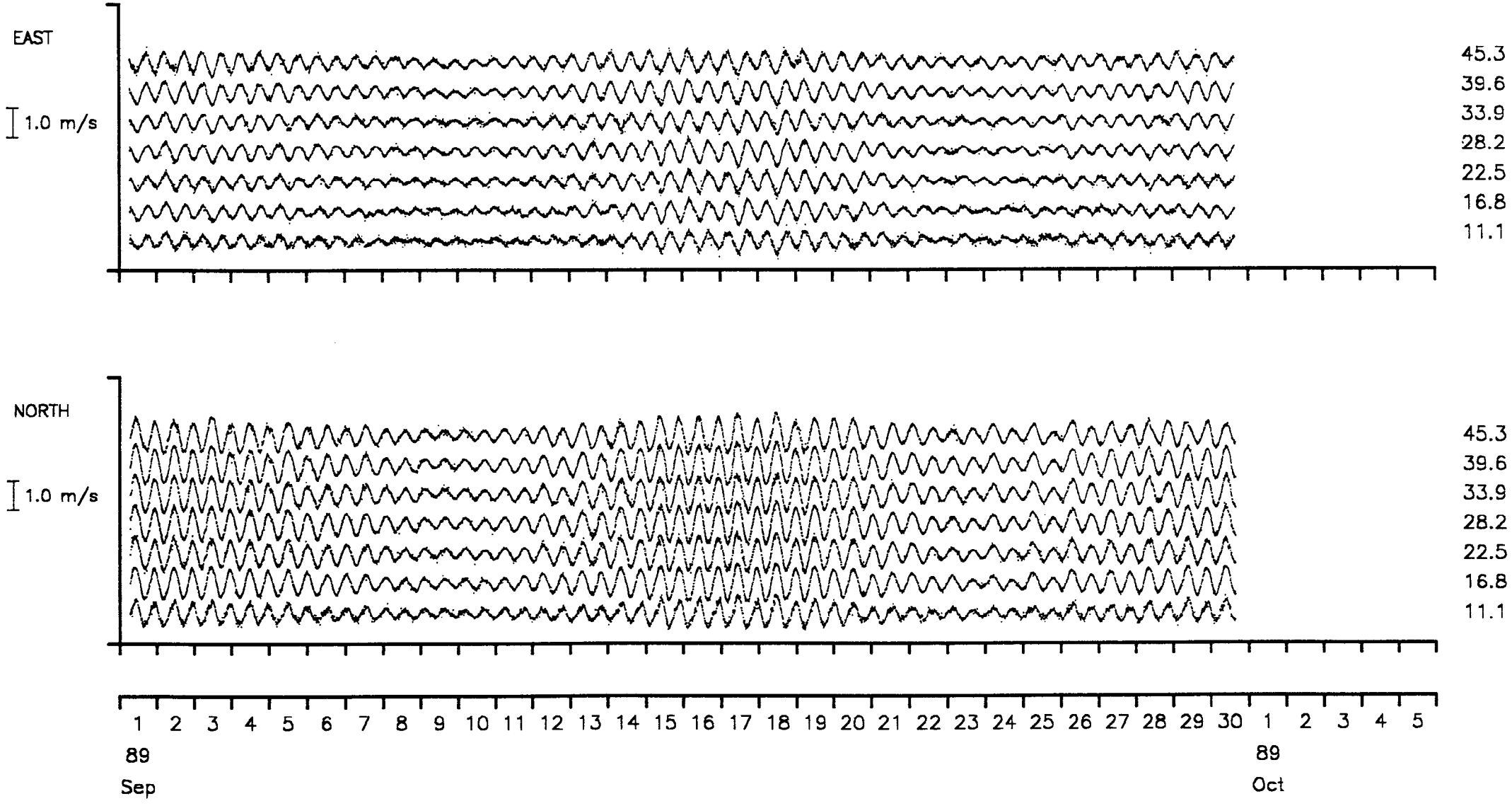
Rig No	:	C59CC
Meter No	:	0002
Frame angle correction	:	-4.2 degrees
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Meter type	:	DP
Meter started	:	31-AUG-89 21:37:08
Meter stopped	:	30-SEPT-89 17:07:11
Period switched on	:	29.8 days
Period of good data	:	29.4 days
Total number of scans	:	4230
Timing error	:	3 seconds slow
Comments	:	Good record obtained

VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C59CC Depth of water(m) 59.0

Start/End 1989/09/01 AT 06:59:00 1989/09/30 AT 16:00:00

Position 54 20.43N 00 23.94E 11.1 Base Ht 5.7 Gap Ht

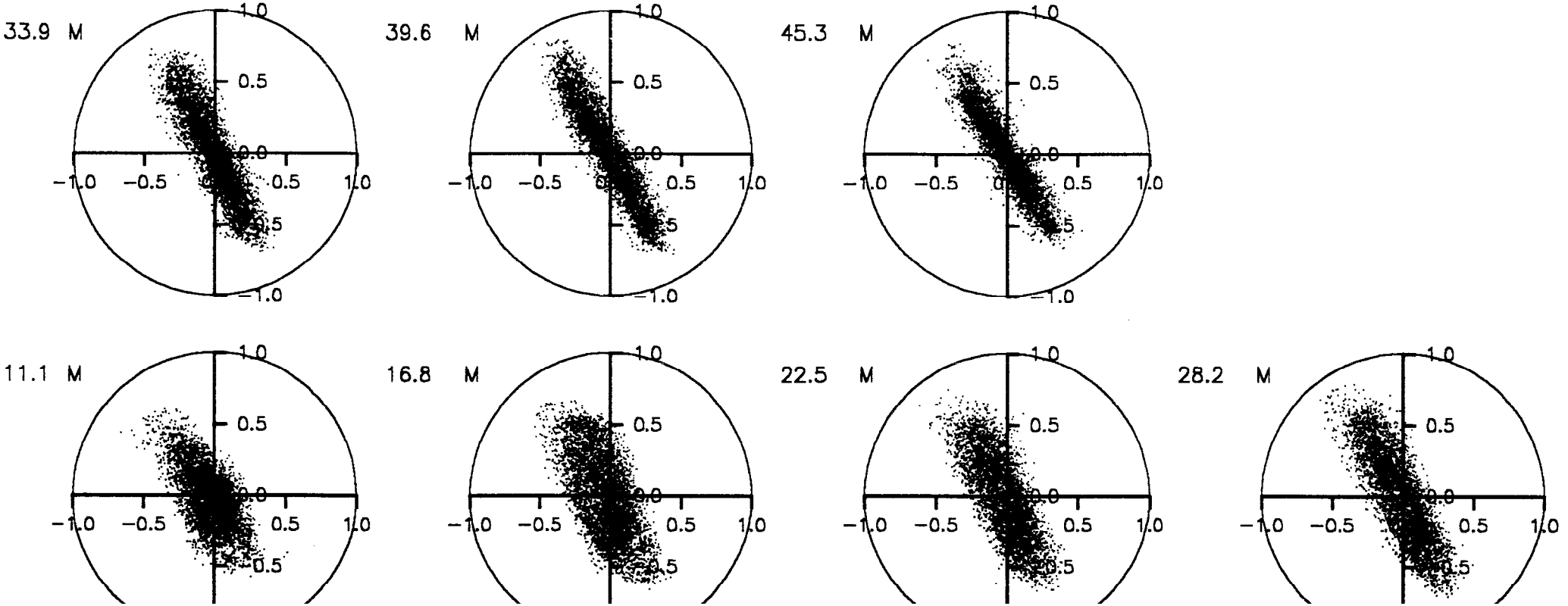


SCATTER PLOT

Meter no. 0002 Rig no. C59CC Depth of water(m) 59.0

Start/End 1989/09/01 AT 06:59:00 1989/09/30 AT 16:00:00

Position 54 20.43N 00 23.94E 11.1 Base Ht 5.7 Gap Ht



STICK TIME SERIES PLOT

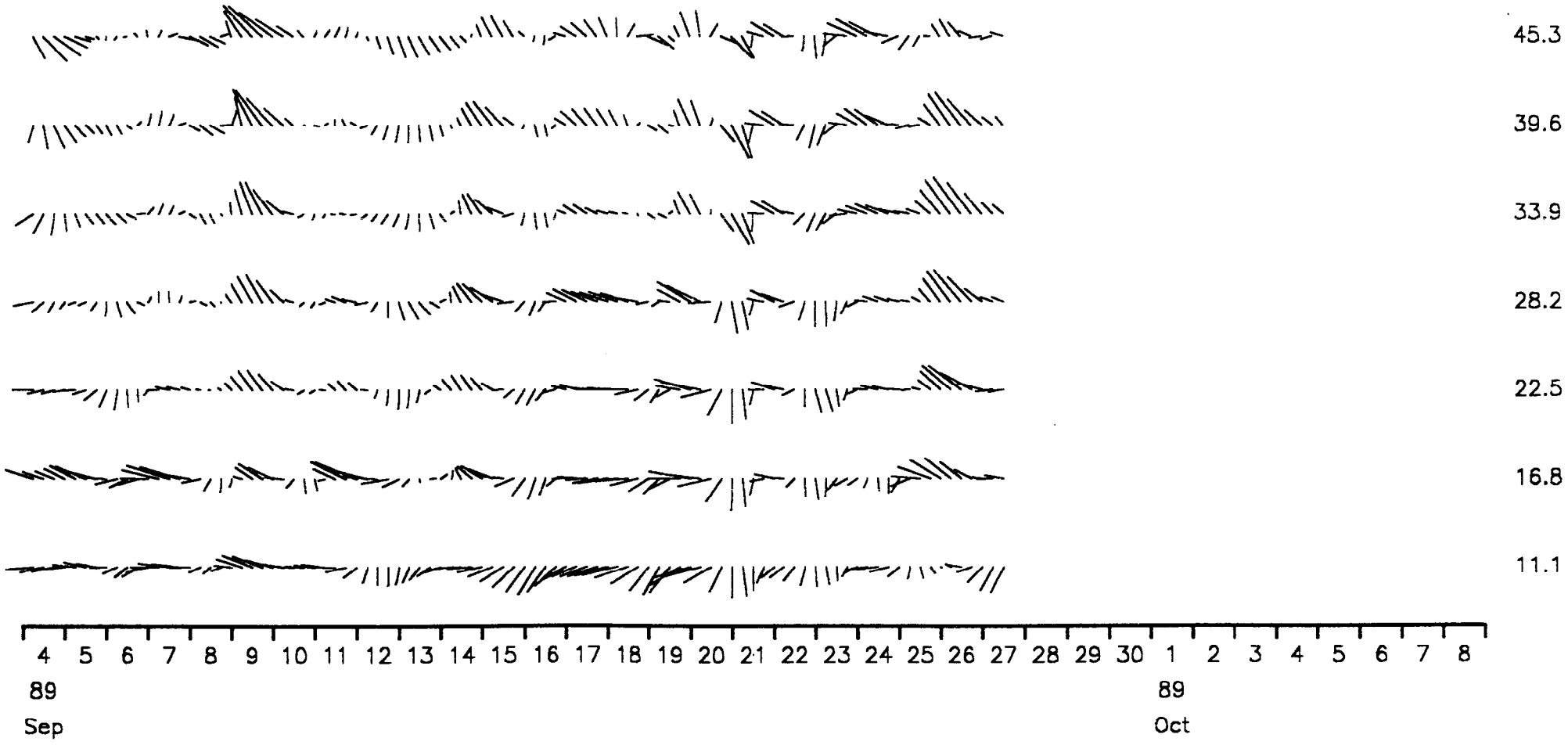
Meter no. 0002 Rig no. C59CC Depth of water(m) 59.0

Start/End 1989/09/01 AT 06:59:00 1989/09/30 AT 16:00:00

Position 54 20.43N 00 23.94E 11.1 Base Ht 5.7 Gap Ht

——— Bin Ht (m)

Scale 0.1 m/s



STATISTICS FOR DP0002 C59CC

Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.035	-107.0	0.0564	-29.6	0.0093	60.4
2	16.8	0.037	-80.6	0.0947	-21.4	0.0129	68.6
3	22.5	0.025	-78.2	0.0959	-24.7	0.0091	65.3
4	28.2	0.024	-63.6	0.1191	-26.2	0.0077	63.8
5	33.9	0.018	-55.6	0.1122	-25.7	0.0049	64.3
6	39.6	0.016	-46.6	0.1356	-28.8	0.0039	61.2
7	45.3	0.009	-48.3	0.1060	-31.0	0.0034	59.0

Filtered Statistics
For all good data bins

ADCP Bin Number	ADCP Bin Height	Vector Mean Speed	Vector Mean Direction	Maximum Variance	Direction of Maximum Variance	Minimum Variance	Direction of Minimum Variance
1	11.1	0.033	-118.2	0.0004	-49.8	0.0002	40.2
2	16.8	0.031	-94.7	0.0007	-51.8	0.0002	38.2
3	22.5	0.020	-96.3	0.0005	-35.3	0.0001	54.7
4	28.2	0.017	-82.0	0.0007	-36.2	0.0001	53.8
5	33.9	0.011	-79.9	0.0007	-31.5	0.0001	58.5
6	39.6	0.010	-64.7	0.0009	-32.9	0.0001	57.1
7	45.3	0.005	-61.2	0.0009	-46.6	0.0002	43.4

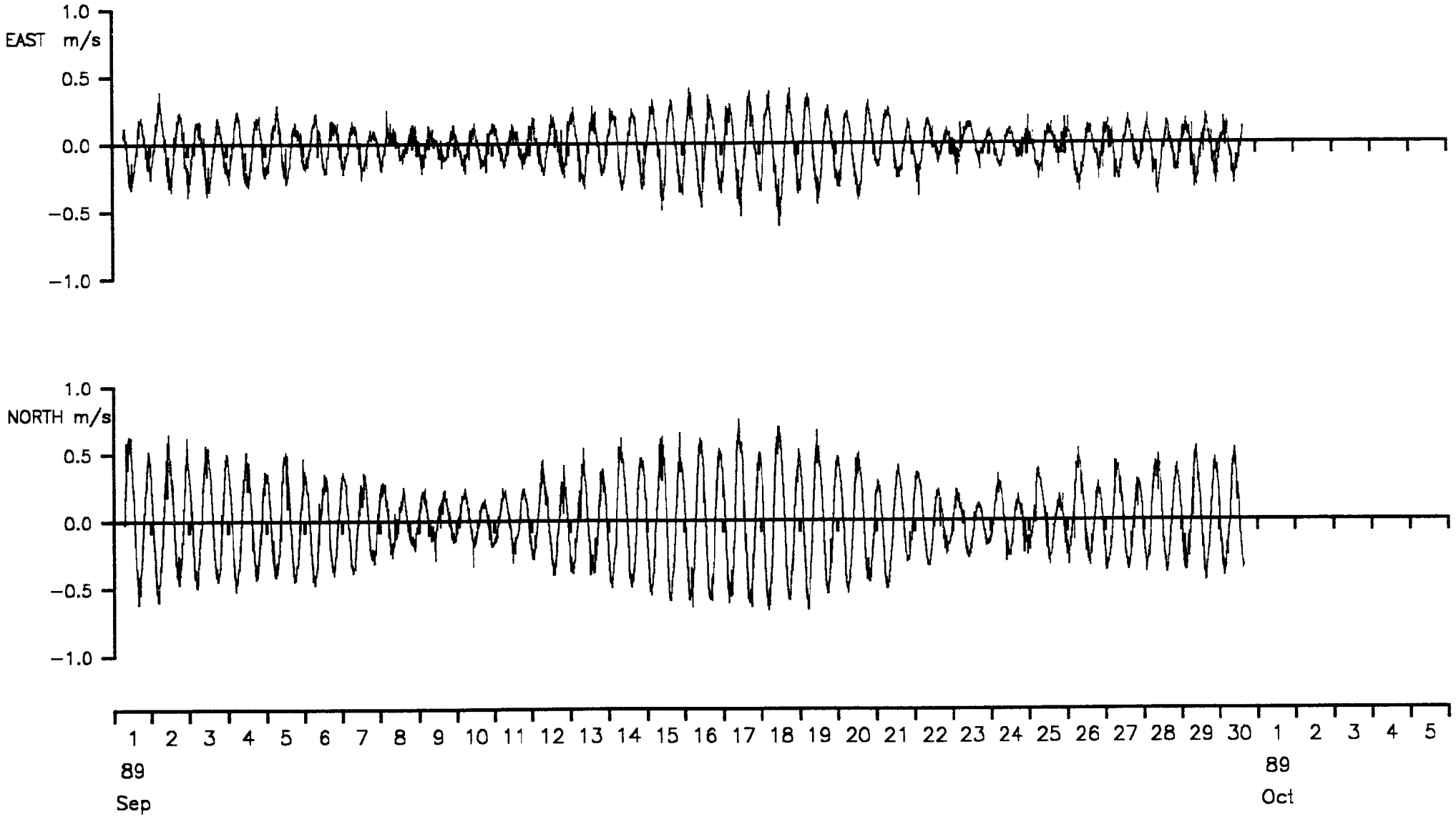
VELOCITY COMPONENT TIME SERIES PLOT

Meter no. 0002 Rig no. C59CC Depth of water(m) 59.0

Start/End 1989/09/01 AT 06:59:00 1989/09/30 AT 16:00:00

Position 54 20.43N 00 23.94E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average depth



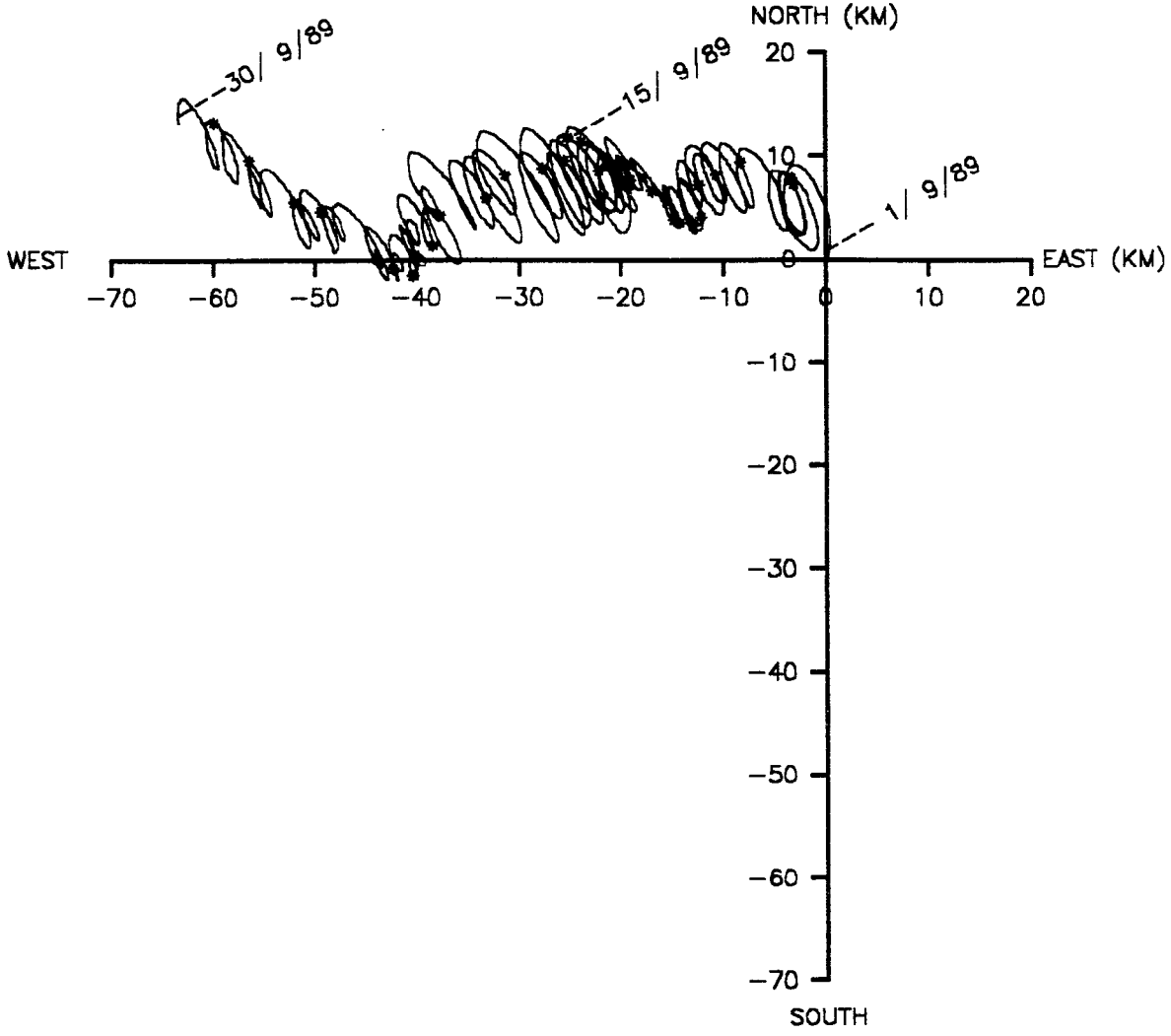
VECTOR PLOT

Meter no. 0002 Rig no. C59CC Depth of water(m) 59.0

Start/End 1989/09/01 AT 06:59:00 1989/09/30 AT 16:00:00

Position 54 20.43N 00 23.94E 11.1 Base Ht 5.7 Gap Ht 22.5 Bin Ht (m)

Bin closest to depth average



Statistics for DP0002 C59CC3 A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	-0.0249	0.24271119E-01	0.15579188E+00
Northings	0.0052	0.80702782E-01	0.28408247E+00
Speed	0.2844	0.24736706E-01	0.15727907E+00

Vector mean speed 0.0255
Vector Mean Direction -78.2

Maximum ten values

Eastings					Northings				
0.408	0.403	0.387	0.386	0.381	0.745	0.701	0.692	0.691	0.675
0.374	0.364	0.362	0.361	0.361	0.667	0.661	0.661	0.657	0.651

Minimum ten values

Eastings					Northings				
-0.476	-0.482	-0.492	-0.495	-0.502	-0.619	-0.623	-0.631	-0.633	-0.641
-0.529	-0.541	-0.544	-0.545	-0.614	-0.644	-0.650	-0.660	-0.663	-0.668

Maximum speeds

0.882	0.851	0.831	0.815	0.808	0.807	0.779	0.766	0.757	0.746
0.745	0.741	0.738	0.738	0.738	0.737	0.736	0.735	0.734	0.732
0.726	0.724	0.723	0.718	0.717	0.716	0.707	0.703	0.702	0.702
0.698	0.687	0.686	0.686	0.685	0.685	0.683	0.682	0.681	0.680
0.679	0.678	0.677	0.676	0.676	0.671	0.671	0.670	0.669	0.669
0.669	0.668	0.668	0.668	0.667	0.667	0.667	0.667	0.665	0.664
0.663	0.660	0.658	0.658	0.657	0.656	0.656	0.650	0.650	0.647
0.646	0.645	0.644	0.644	0.641	0.641	0.641	0.640	0.640	0.640
0.636	0.636	0.635	0.634	0.633	0.632	0.631	0.631	0.630	0.630
0.630	0.630	0.630	0.628	0.628	0.627	0.625	0.625	0.624	0.624

Variance ellipse statistics

Maximum variance 0.9589E-01 Direction -24.7

Minimum variance 0.9081E-02 Direction 65.3

Total variance 0.1050E+00 Ratio of variances 0.9470E-01

Average direction. maxdir -PI/2 to maxdir +PI/2 -0.1

Average direction. maxdir +PI/2 to maxdir -PI/2 183.9

Statistics for DP0002 C59CC3F A
Doppler bin number 3

	Mean	Variance	Standard deviation
Eastings	-0.0202	0.24472526E-03	0.15643701E-01
Northings	-0.0022	0.36617415E-03	0.19135684E-01
Speed	0.0287	0.19750785E-03	0.14053743E-01

Vector mean speed 0.0203
Vector Mean Direction -96.3

Maximum ten values

Eastings					Northings				
0.012	0.011	0.006	0.005	0.001	0.041	0.041	0.034	0.033	0.030
0.001	0.000	-0.001	-0.002	-0.003	0.029	0.027	0.025	0.025	0.023

Minimum ten values

Eastings					Northings				
-0.041	-0.046	-0.049	-0.051	-0.051	-0.028	-0.028	-0.029	-0.031	-0.031
-0.052	-0.053	-0.057	-0.061	-0.067	-0.035	-0.037	-0.041	-0.048	-0.056

Maximum speeds

0.070	0.068	0.064	0.064	0.060	0.056	0.053	0.052	0.051	0.048
0.047	0.046	0.046	0.043	0.043	0.041	0.041	0.041	0.040	0.039
0.037	0.037	0.037	0.036	0.036	0.032	0.031	0.031	0.031	0.030
0.030	0.030	0.030	0.030	0.029	0.029	0.029	0.029	0.028	0.028
0.028	0.028	0.027	0.027	0.027	0.027	0.026	0.026	0.025	0.025
0.025	0.025	0.025	0.025	0.025	0.024	0.024	0.024	0.024	0.024
0.023	0.022	0.022	0.022	0.021	0.021	0.021	0.021	0.021	0.021
0.020	0.019	0.018	0.018	0.018	0.018	0.017	0.017	0.016	0.016
0.015	0.014	0.014	0.014	0.014	0.012	0.011	0.011	0.010	0.010
0.009	0.007	0.006	0.004						

Variance ellipse statistics

Maximum variance 0.4880E-03 Direction -35.3

Minimum variance 0.1229E-03 Direction 54.7

Total variance 0.6109E-03 Ratio of variances 0.2519E+00

Average direction. maxdir -PI/2 to maxdir +PI/2 -31.0

Average direction. maxdir +PI/2 to maxdir -PI/2 233.5

Meter information details for 9633

Rig No	:	C59CC
Meter No	:	9633
Recording interval	:	600.0 seconds
Meter height from bottom	:	0.8 m
Position of meter on rig	:	A
Meter type	:	AS
Meter started	:	31-AUG-89 14:15:00
Meter stopped	:	02-OCT-89 03:35:00
Period switched on	:	31.6 days
Period of good data	:	29.4 days
Total number of scans	:	4230
Timing error	:	None
Comments	:	Good record obtained
		No PRESSURE sensor fitted to meter

TEMPERATURE,SALINITY AND PRESSURE TIME SERIES PLOTS

Meter no. 9633 Rig no. C59CC Depth of water(m) 59.0

Start/End 1989/09/01 AT 06:59:00 1989/09/30 AT 16:00:00

Position 54 20.43N 00 23.94E Meter Height(m) 0.8